

zenith



SERVICE MANUAL

Model Number:

Product Type:	Presentation Series
Chassis:	FCH-50
Manual Part #:	3828VD0205B
Model Line:	H
Product Year:	2004

H20H52DT
H20H52DT8
HW20H52DT
HW20H52DT11

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PRODUCT SAFETY SERVICING GUIDELINES FOR AUDIO-VIDEO PRODUCTS

IMPORTANT SAFETY NOTICE

This Manual was prepared for use only by properly trained audio-visual service technicians.

When servicing this product, under no circumstances should the original design be modified or altered without permission from Zenith Electronics Corporation. All components should be replaced only with types identical to those in the original circuit and their physical location, wiring and lead dress must conform to original layout upon completion of repairs.

Special components are also used to prevent x-radiation, shock and fire hazard. These components are indicated by the letter "x" included in their component designators and are required to maintain safe performance. No deviations are allowed without prior approval by Zenith Electronics Corporation.

Circuit diagrams may occasionally differ from the actual circuit used. This way, implementation of the latest safety and performance improvement changes into the set is not delayed until the new service literature is printed.

Caution: Do not attempt to modify this product in any way. Never perform customized installations without manufacturer's approval. Unauthorized modifications will not only void the warranty, but may lead to property damage or user injury.

Service work should be performed only after you are thoroughly familiar with these safety checks and servicing guidelines.

Graphic symbols



The exclamation point within an equilateral triangle is intended to alert the service personnel to important safety information in the service literature.



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the service personnel to the presence of noninsulated "dangerous voltage" that may be of sufficient magnitude to constitute a risk of electric shock.



The pictorial representation of a fuse and its rating within an equilateral triangle is intended to convey to the service personnel the following fuse replacement caution notice:
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ALL FUSES WITH THE SAME TYPE AND RATING AS MARKED NEAR EACH FUSE.

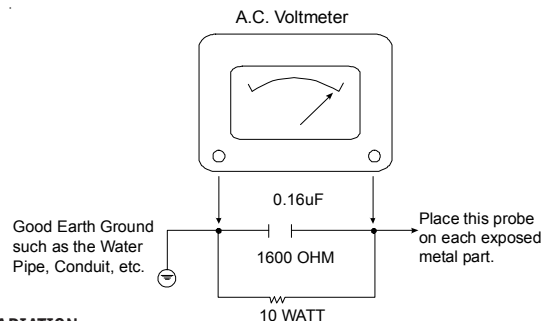
SERVICE INFORMATION

While servicing, use an isolation transformer for protection from AC line shock.

After the original service problem has been corrected, make a check of the following:

FIRE AND SHOCK HAZARD

1. Be sure that all components are positioned to avoid a possibility of adjacent component shorts. This is especially important on items transported to and from the repair shop.
2. Verify that all protective devices such as insulators, barriers, covers, shields, strain reliefs, power supply cords, and other hardware have been reinstalled per the original design. Be sure that the safety purpose of the polarized line plug has not been defeated.
3. Soldering must be inspected to discover possible cold solder joints, solder splashes, or sharp solder points. Be certain to remove all loose foreign particles.
4. Check for physical evidence of damage or deterioration to parts and components, for frayed leads or damaged insulation (including the AC cord), and replace if necessary.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces must be avoided.
6. After re-assembly of the set, always perform an AC leakage test on all exposed metallic parts of the cabinet (the channel selector knobs, antenna terminals, handle and screws) to be sure that set is safe to operate without danger of electrical shock. **DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST.** Use an AC voltmeter having 5000 ohms per volt or more sensitivity in the following manner: Connect a 1500 ohm, 10 watt resistor, paralleled by .15 mfd 150V AC type capacitor between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1500 ohm resistor and .15mfd capacitor. Reverse the AC plug by using a non-polarized adaptor and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 0.75 volts RMS. This corresponds to 0.5 milliamp AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



X-RADIATION

1. Be sure procedures and instructions to all service personnel cover the subject of x-radiation. The only potential source of x-rays in current TV receivers is the picture tube. However, this tube does not emit x-rays when the HV is at the factory-specified level. The proper value is given in the applicable schematic. Operation at higher voltages may cause a failure of the picture tube or high-voltage supply and, under certain circumstances may produce radiation in excess of desirable levels.
2. Only factory-specified CRT anode connectors must be used.
3. It is essential that the service personnel have available an accurate and reliable high-voltage meter.
4. When the high-voltage circuitry is operating properly, there is no possibility of an x-radiation problem. Every time a color chassis is serviced, the brightness should be run up and down while monitoring the high voltage with a meter, to be certain that the high voltage does not exceed the specified value and that it is regulating correctly.
5. When troubleshooting and making test measurements in a product with a problem of excessively high voltage, avoid being unnecessarily close to the picture tube and the high voltage power supply. Do not operate the product longer than necessary to locate the cause of excessive voltage.
6. Refer to HV, B+, and shutdown adjustment procedures described in the appropriate schematics and diagrams (where used).

IMPLOSION

1. All direct view picture tubes are equipped with an integral implosion protection system; take care to avoid damage during installation.
2. Use only the recommended factory replacement tubes.

TIPS ON PROPER INSTALLATION

1. Never install any receiver in a closed-in recess, cubbyhole, or closely fitting shelf space over, or close to, a heat duct, or in the path of heated air flow.
2. Avoid conditions of high humidity such as: outdoor patio installations where dew is a factor, near steam radiators where steam leakage is a factor, etc.
3. Avoid placement where draperies may obstruct venting. The customer should also avoid the use of decorative scarves or other coverings that might obstruct ventilation.
4. Wall- and shelf-mounted installations using a commercial mounting kit must follow the factory-approved mounting instructions. A product mounted to a shelf or platform must retain its original feet (or the equivalent thickness in spacers) to provide adequate air flow across the bottom. Bolts or screws used for fasteners must not touch any parts or wiring. Perform leakage tests on customized installations.
5. Caution customers against mounting a product on a sloping shelf or in a tilted position, unless the receiver is properly secured.
6. A product on a roll-about cart should be stable in its mounting to the cart. Caution the customer on the hazards of trying to roll a cart with small casters across thresholds or deep pile carpets.
7. Caution customers against using a cart or stand that has not been listed by Underwriters Laboratories, Inc. for use with its specific model of television receiver or generically approved for use with TVs of the same or larger screen size.
8. Caution customers against using extension cords. Explain that a forest of extensions, sprouting from a single outlet, can lead to disastrous consequences to home and family.

PRODUCT SAFETY SERVICING GUIDELINES FOR AUDIO-VIDEO PRODUCTS

X-Radiation

To prevent possible exposure to x-radiation caused by excessive CRT anode voltage, the CH-Flat chassis incorporate a “High Voltage Shutdown” circuit. This circuit senses the level of a flyback pulse from the “Flyback Transformer” representative of the actual high voltage on the CRT anode. When this level exceeds a predetermined voltage, the circuit shuts down the TV set, preventing further generation of anode voltage.

Shutdown Circuit Operation

(Refer to Figure below)

The flyback pulse voltage from pin 6 of TX3201 (Flyback Transformer) is peak detected (rectified) by the action of diode DX3001 and capacitor C3003. This form a DC voltage appearing on C3003 representative of the CRT anode voltage (HV) produced by TX3201. This voltage is divided down by precision resistors RX3004, RX3005, RX3006 and RX3007. This lower voltage appears on the zener diode ZD3000; when this voltage exceeds by 3.5 Vdc the “zener voltage” the HV shutdown occurs (pin 29 of ICX2200).

CRT Anode High Voltage Measurement Procedure

Each CRT screen size has it’s own safe operating anode and shut-down voltage. Critical safety component (designated with an ‘X’ in the component designator) are designed to operate the CRT at a safe operating anode voltage and provide proper shutdown thresholds. If replacement of any of these components are deemed necessary, it is important to use original type Zenith components. After replacement is made, confirm proper anode voltage using the following procedure.

Measurement of the CRT anode voltage must be performed using a high impedance-high voltage meter, with no raster on the screen, and operating at nominal horizontal frequency, 15.75 KHz (NTSC signal).

After discharging the CRT, connect a high impedance-high voltage meter to the CRT anode. Turn the television ‘on’ and confirm a good signal is being displayed. Reduce Brightness and Contrast settings until the picture is well extinguished.

Observe the anode voltage meter reading and compare with the table below for the proper CRT screen size. If the voltage reading is higher than the maximum, verify circuit component values and proper operation.

CRT Anode Voltage		
CRT Screen Size	Nominal Anode Voltage (KV)	Max. Shutdown Voltage (KV)
20"	26+/-1.0	32

COMPONENTS WITH ANY INFLUENCE IN HV INCREASE	
Fly-Back Transformer	CX3215
Deflection Yoke	CX3216
CX3203	RX3753
CX3204	RX3754
CX3205	RX3755
CX3206	RX3756
CX3207	

HV SHUTDOWN PROCEDURE.

- After discharging the CRT, connect a high impedance-high voltage meter to the CRT anode
- Access **Video Menu** and adjust Brightness and Contrast controls for minimum screen luminance (beam current to 0 mA).
- Wait until the **Video Menu** or display disappear.
- Connect a variable Resistor (1 MW) between ground and junction of RX3754 and RX3755, and decrease slowly the resistance value until shutdown occurs.
- Measure High Voltage shutdown.

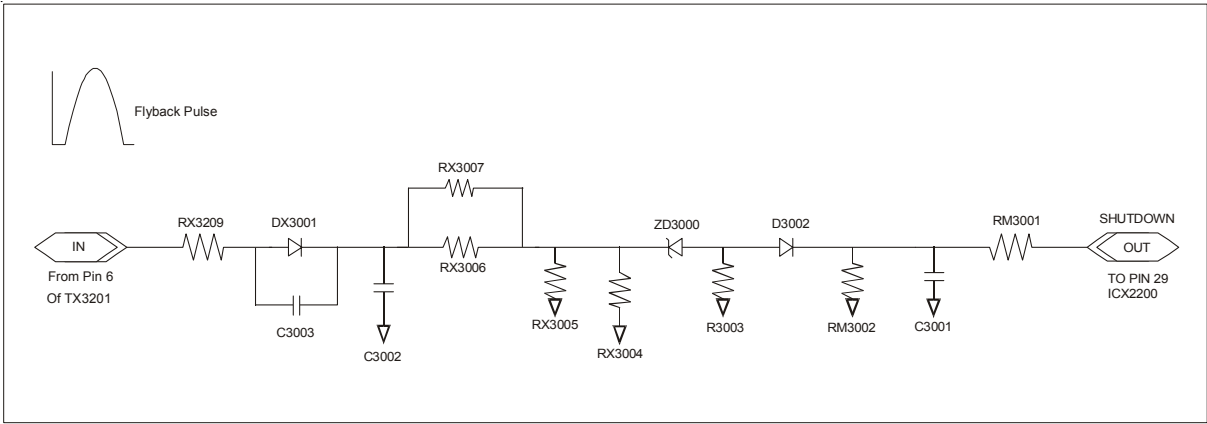


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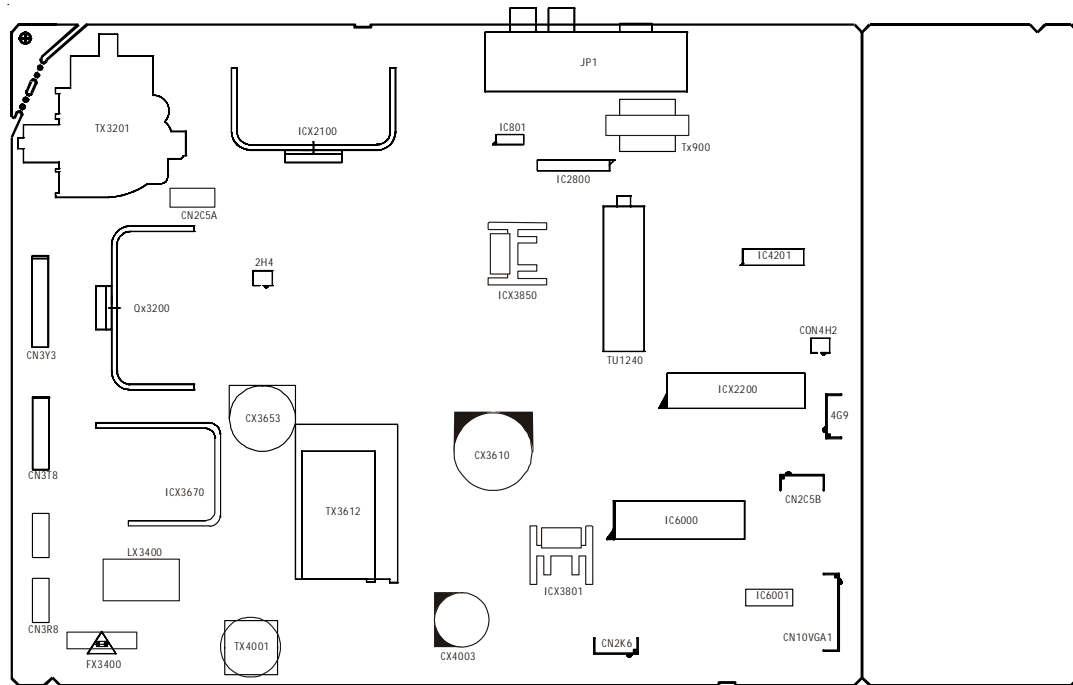
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OVERVIEW



INTRODUCTION

This manual provides a brief explanation in an overall view of the CH-Flat chassis used on Health view model flat screen. The CH-Flat series chassis features seven ICs for all signal, sync, and sweep processing.

ICX2200 - Handles all of the audio/video, sync and sweep drive processing.

IC6000 - Main microprocessor. It is tied directly to the keyboard and the infrared detector.

IC6001 - System memory.

ICX2100 - Handles vertical sweep.

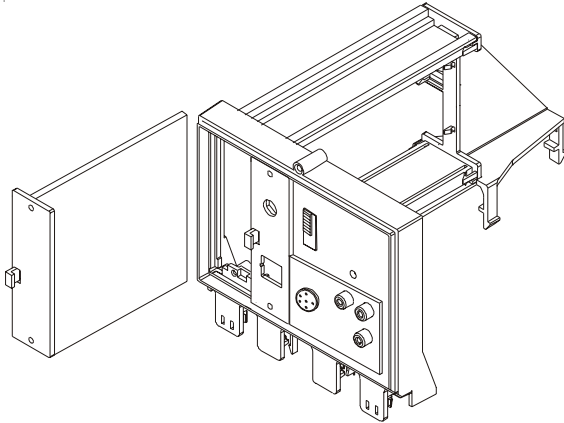
IC2800 - Audio switch.

ICX3612 - Power supply. This is a switching type supply powered by a bridge rectifier circuit. This IC supplies power for Microprocessor and powering the LSP or MPI port third party application.

The table below contains some general information about the Commercial model. Refer to the interconnect and parts list for more information.

CH-Flat Chassis Model Information							
MODEL	SCR	JACKS	AUDIO	EXTRA FEATURES	REMOTE CONTROLLER RECEIVER	MICRO	OP GUIDE/OWNER MANUAL
H20H52DT/DT8	20	3	MONO	SuperPort Slot, MPI Card	6712SCA227A	O1MCRKE018A	3828VA0518B

OVERVIEW (continued)



INTERFACES

SUPERPORT - MPI

Zenith Commercial Product receivers are now being adapted to interact with other equipment. Prime examples of this can be found in Lodging and Health Care situations where the set is controlled from the main office.

All this is made possible by the new technology that is being built into these receivers. The SuperPort and/or Multiple Protocol Interface (MPI) jack and associated circuitry allow remote control of the set.

MULTIPLE PROTOCOL INTERFACE

Television functions and features are controlled by the communication of commands and status information through a Superport by the MPI interface.

EBC (EDGE BOARD CONNECTOR)

Allows easy access for removing/installing accessory modules providing a rail mounted slide-through card. These cards might contain one of the above features.

CONNECTION CENTER ON BACK OF TV

The connection on the back of the TV contains the input and output interfaces.

CONNECTION CENTER ON REAR OF TV

The connection center on the rear of the TV allows for connection of the viewing source. The diagrams list the use of each jack on the connection center.

1. ANTENNA/CABLE JACK

Use the jack for 75-ohm antenna-type signal connections to the TV. Attach antenna, cable TV line, or other video equipment to jack. The input cable may come from an outdoor or master antenna, cable TV line, cable decoder box, or the RF output from a VCR.

2. SUPERPORT LOCATION

Provides for easy installation of local service provider accessory module without removing the cabinet and receives operating power and all necessary interface signals through internal connections.

3. MPI (MULTIPLE PROTOCOL INTERFACE) JACK

Standard RJ11 jack to provide interface with in-room entertainment and video services. Also used with installer's programmer (page 1-5) for programming other TVs in the system with the same features as the master TV.

4. VIDEO IN AND AUDIO IN

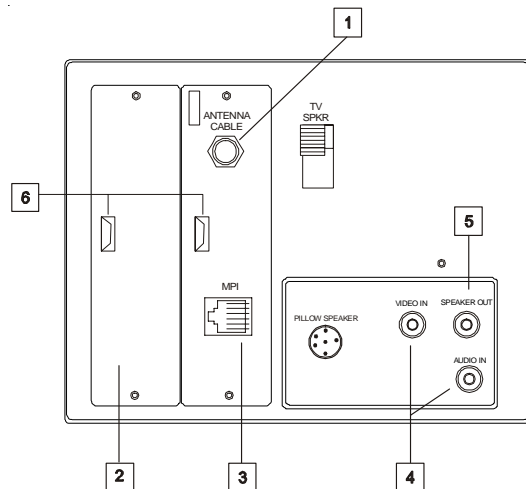
Use the Video and Audio In jacks for baseband video and audio input signals from a VCR or other signal source.

5. SPEAKER OUT

Use this jack for connection of an 8-ohm extension speaker to get television sound at a remote location. The speaker in the TV remains active, while a monaural audio output is heard from the remote speaker.

6. EBC KNOB

For handling/removal of EBC (Edge Board Card).



OVERVIEW (continued)

PILLOW SPEAKER INTERFACE

DESCRIPTION

The pillow speaker interface within the TV, provides three remote control lines and an audio output. It is intended for connection to a patient-pendant remote control, or entertainment audio and nurse call system. All lines are isolated from the AC power line and ground. Isolation of the control lines is provided by optoisolators. There are no relays or inductive components in the control lines. Isolation of the audio output is provided by an isolator transformer.

Purpose of Interface Pins

Pin #1 External TV ON /OFF closure.

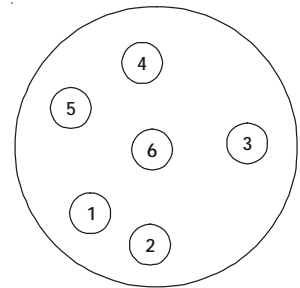
Pin #2 Open (not used).

Pin #3 External Channel Up Closure or Data In.

Pin #4 Common for External Control.

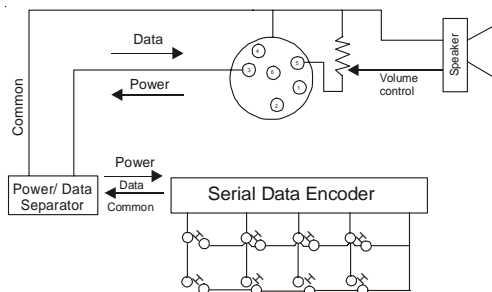
Pin #5 Audio Output. The impedance from this pin to earth ground is a nominal 10 Megohm static leakage resistor in parallel with an 1100 picofarad capacitor.

Pin #6 External Channel Down Closure.



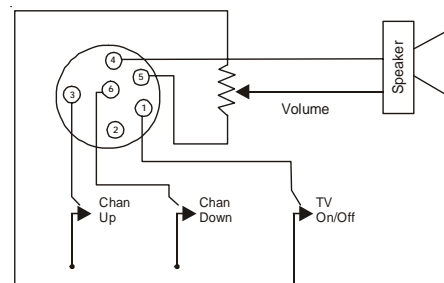
- 1 TV ON/OFF
- 2 Open
- 3 Chan Up/Data In
- 4 Common
- 5 Audio Out
- 6 Chan Down

THEORY OF MULTIPLEXED DATA MODE



Pins 3 and 4 support a built-in interface which allows multiple functions on a single wire by means of serial digital coding. Pin 3 will source up to 2 mA during the digital "0" interval to supply operating power for the digital encoder located in the pillow speaker. The coder must sink a minimum of 5 mA to pin 4 during the digital "1" interval and provide the correct serial data stream. Pillow speakers meeting this specification are available from independent manufacturers such as Curbell, Inc. (Manufacturers wishing to produce compatible pillow speakers or other products should contact Zenith Commercial Products for detailed specifications). An isolated audio output is at pins 4 and 5.

THEORY OF SIMPLE SWITCH MODE



Mode pins 1, 3, and 6 are connected to pin 4 by way of momentary-action switches to activate indicated control function. These pins are 13 Vdc positive with respect to pin 4 when the switches are open. Loop current is 8 mA with the switches closed. Isolated audio output is at pins 4 and 5. Mode of operation is identical to previous Zenith models using the 5-Wire Interface with the exception of higher open circuit voltage (was 7 Vcd) and higher loop current (was 2.5 mA).

OVERVIEW (continued)

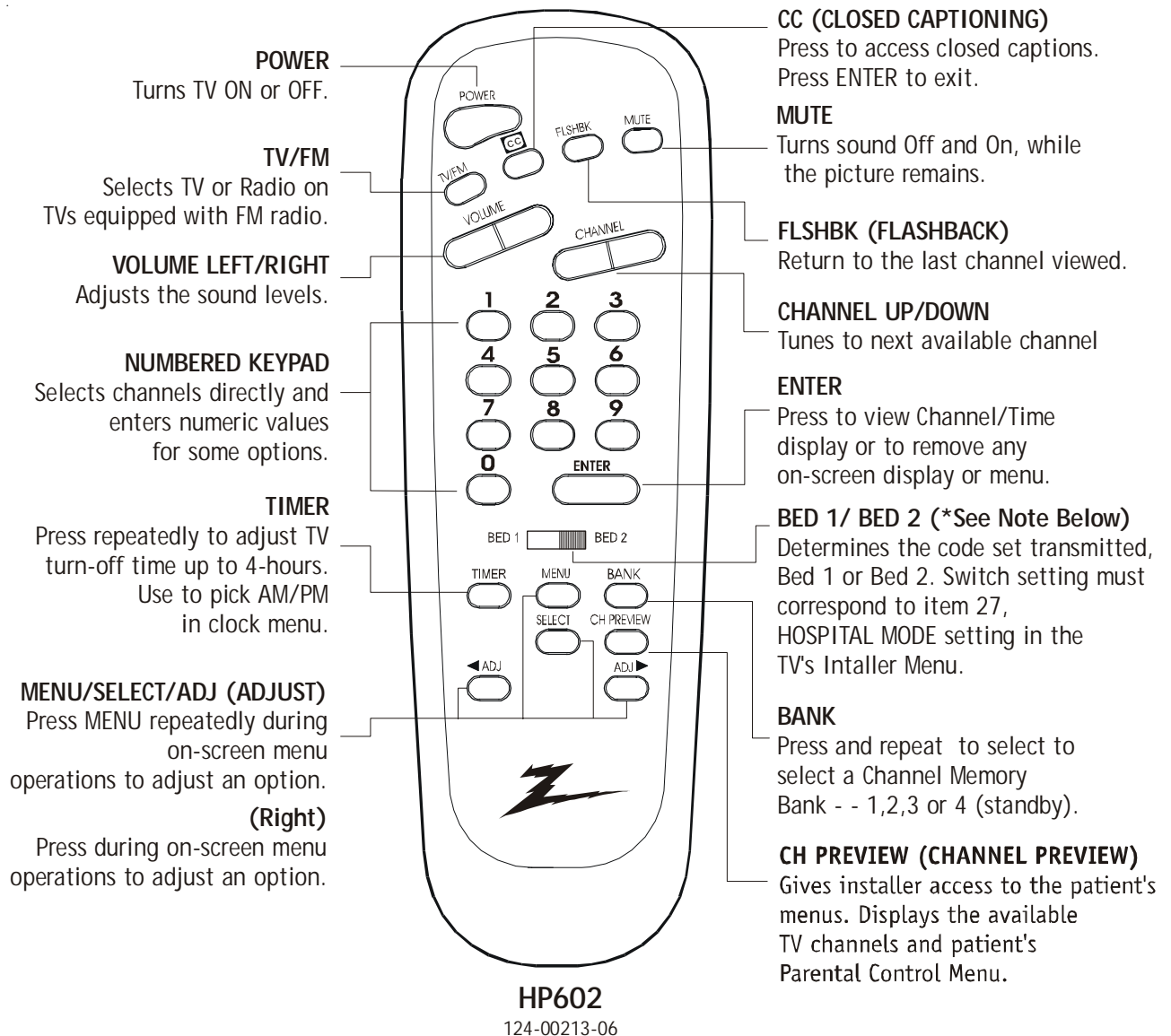
SETTINGS MIN/MAX VOLUME LEVELS

Use the following procedure to adjust minimum volume and maximum volume for pillow speaker. This procedure not only sets the maximum volume level that the pillow speaker can produce, but also prevents the TV's volume from accidentally being adjusted to level which is too low or too loud.

1. Connect pillow speaker. Place INT/EXT speaker switch on back of TV in EXT position.
2. Set VOLUME control on pillow speaker to maximum volume position.
3. Access Service Menu by following the instructions given in the "Service Menu" section of this book. Select the MAX volume. Use the **ADJUST** key to set highest desired volume level within the range of 0 to 63. This will be the highest desired volume level, as heard at the pillow speaker.
4. Select the MIN volume. Use the **ADJUST** key to set the lowest desired volume level within the range of 0 to 63. This will be the lowest desired volume level as heard at the pillow speaker.
5. Make no further adjustments and exit the Service Menu.

The TV is now adjusted for minimum and maximum volume settings. All further adjustments of the TV's volume should be made by using the VOLUME control on the pillow speaker.

OVERVIEW (continued)

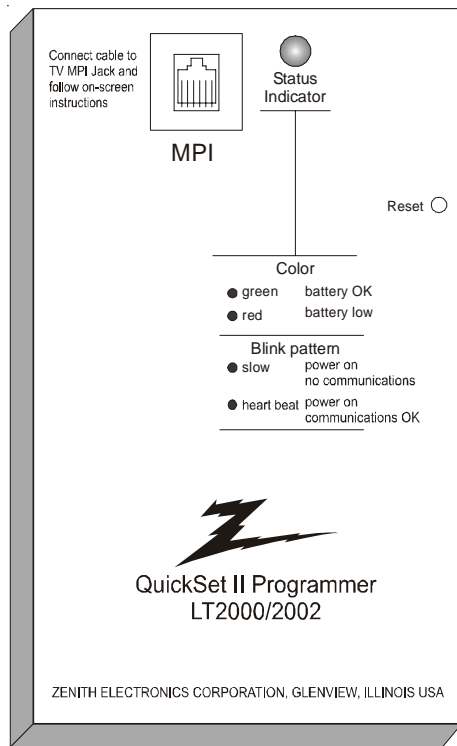


*Note: Bed 1 - Bed 2 switch on installer/patient remote. The position of the Bed 1-Bed 2 switch must correspond to the setting in the Installer's menu. The switch above can be set by sliding it to the Bed 1 or Bed 2 position. On the patient's remote, the Bed 1 or Bed 2 position can be selected by using a paper clip or a ball-point pen to slide the switch to the correct position.

Left position = Bed 1.

Right position = Bed 2.

OVERVIEW (continued)



LT-2000/2002 CLONE PROGRAMMER

The Quick Set II programmer LT2000 or LT2002 allows custom setup and programming information to be quickly copied from a master TV into multiple television sets. Once learned from the master, setup data is retained in the LT2002 for future use and recall.

When using the LT2002, operation will be easier if the TV is connected to a good quality signal and displaying a stable picture. To operate the LT2002, use the indicated keys on an installer's remote or user's remote, or the front panel keys on the TV receiver.

SETUP

Begin the programming process by setting up a master TV set using one of the installer's remotes or an MBR remote. Follow the instructions in the operating guide for the specific TV model. Remember to set all features that will be customized including the channel scan list, channel labels, and installer menu setups.

Next connect the LT2002 to the master TV set using the cable provided with the programmer. Connect the cable between the MPI jack on the TV and the programmer. The TV set automatically activates the programmer.

Once connected, check the "Status Indicator" LED on the programmer. If the indicator is green and flashing (a double-blink "heartbeat" pattern), proceed to the next step.

NOTE: A slowly flashing green light indicates there is a problem with the communications between TV and programmer. In this case, check for damaged cable, poor contacts, or other connection problems. If the status indicator is red, the programmer batteries are low.

If communications are good, the sign-on screen will be displayed on the TV screen as shown on the quick setup instructions. If the intention is to set the TV's or programmer's real-time clocks, and not the clone clock or TV clock time settings, then press a key to proceed to the main clone menu.

If a previously stored TV setup is in a particular clone memory, it may be changed if desired by overwriting it with a new setup. There is no need for a separated memory clear operation. Setups stored in programmer memory are nonvolatile and will be retained even after a battery change.

LEARN FROM TV

Select "Learn From TV" then press ON/OFF, POWER, or ENTER to begin learning process. Alternatively, use the TV front panel CHANNEL UP or CHANNEL DOWN keys to highlight choice. Press ON/OFF, POWER, or ENTER to activate. The next screen will allow a choice of four available memories to store this TV setup. Four different TV setups can be stored in the LT2002.

Using the On-screen menu, choose a memory or choose to return to the main selection menu. Now press ON/OFF, POWER, or ENTER to activate your selection. The next screen allows one last opportunity to check the versions of TV and clone setups.

Press ON/OFF or POWER to activate the learning cycle, or press any other keys to return to the selection menu to make another choices.

Once a process has begun, the TV screen will display "LEARNING IN PROGRESS". Please wait for the process to complete. When the TV screen displays "LEARNING COMPLETED", press any key to end the learning process and return to the clone selection menu.

TEACH TO TV

Select "TEACH TO TV", and then press ON/OFF, POWER, or ENTER to begin teaching process. Alternatively, use the TV front panel CHANNEL UP or DOWN keys to highlight the choice and then press ON/OFF, POWER, or ENTER to activate. The next screen displays a choice of the four available memories that can be copied to the TV. Select the desired memory number, and press ON/OFF, POWER, or ENTER to begin the teaching process. Alternatively, use the TV front panel CHANNEL UP or DOWN keys to highlight choice. Press ON/OFF, POWER, or ENTER to begin.

OVERVIEW (continued)

Using the on-screen menu, select a memory or return to the main selection menu. Then press ON/OFF, POWER, or ENTER to activate the selection.

The next screen allows for one last opportunity to check the versions of TV and clone setups. Press ON/OFF or POWER to activate the teaching cycle, or any other key to return to the selection menu to make other choices.

Once a process has begun, the TV screen will display the "TEACHING IN PROGRESS" message. Please wait for the process to complete. When the TV screen displays "TEACHING COMPLETED", press any key to end the teaching process and return to the clone selection menu.

SET CLONE CLOCK FROM TV

To set the real-time clock in the LT2002, select "SET CLONE FROM TV" and then press ON/OFF, POWER, or ENTER to copy current TV time to the clone clock. Alternatively, use the TV front panel CHANNEL UP or CHANNEL DOWN keys to highlight the choice. Then press ON/OFF, POWER, or ENTER to activate.

This process will return the LT2002 to the sign-on screen to display the clone and TV clock settings. Press a key to go to the clone selection menu and perform other functions, or simply disconnect if the time setting was the last task.

SET TV CLOCK FROM CLONE

To set the real time clock in the, select "SET TV CLOCK FROM CLONE" and then press ON/OFF, POWER, or ENTER to copy current LT2002 time to the TV clock. Alternatively, use the TV front panel CHANNEL UP or CHANNEL DOWN keys to highlight the choice. Then press ON/OFF, POWER, or ENTER to activate.

This process will return the LT2002 to the sign-on screen to display the clone and TV clock settings. Press a key to go to the clone selection menu and perform other functions, or simply disconnect if the time setting was the last task.

DISPLAY TV SETUP

Select "DISPLAY TV SETUP", and then press ON/OFF, POWER, or ENTER to begin the teaching process. Alternatively, use the TV front panel CHANNEL UP or CHANNEL DOWN keys to highlight your choice. Then press ON/OFF, POWER, or ENTER.

The TV screen will display the items in the service menu setups. Use this function to quickly check the TV for correct setup. Press any key to clear display and return to the clone selection menu.

DISPLAY CLONE SETUP

Select "DISPLAY CLONE SETUP" and then press ON/OFF, POWER, or ENTER to begin the teaching process. Alternatively, use the TV front panel CHANNEL UP or CHANNEL

DOWN keys to highlight the choice, then press ON/OFF, POWER, or ENTER to begin.

The TV screen will display the memory selection menu. Select the desired memory number, and then press ON/OFF, POWER, or ENTER to display the contents of the selected memory. Alternatively, use the TV's CHANNEL UP or CHANNEL DOWN keys to highlight the choice, then press ON/OFF, POWER, or ENTER to begin.

The TV screen will display items in the factory menu setup. Use this function to quickly check contents of a particular clone memory for correct setup. Press any key to clear the display and return to the clone selection menu.

OPERATION NOTES

Disconnect the LT2002 from the TV set when the desired task has been completed. Disconnecting the clone automatically switches it off. The real time clock continues to run when the main circuits are switched off.

After replacing exhausted batteries, or if the programmer behaves strangely after a static shock, use a paper clip or similar instrument inserted through the small hole marked "RESET" to activate the internal reset switch and restore normal operation. After reset, check the real-time clock setting. It may be necessary to reset the clock from a TV programmed to the correct time.

The specific microprocessor used in any TV set may be determined by activating the service menu. The microprocessor part number appears at the top of the screen with the service menu is activated. Processors before the 221-01006 has limited screen display capability. They cannot display entire screens as shown in the quick setup instructions accompanying the LT2002 programmer. Use the printed menu illustrations on the quick setup sheet as an aid in making programming choices.

USER MENUS

INSTALLATION SETUP

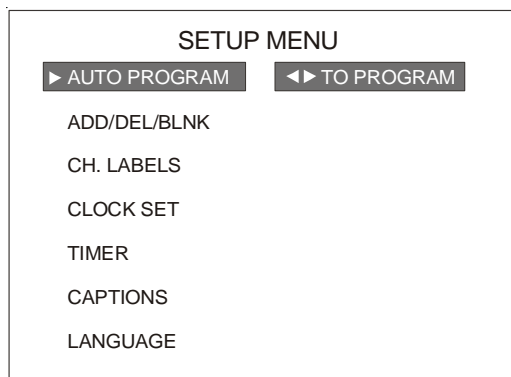
INSTALLER'S REMOTE AND CLONE PROGRAMMER

To perform the installation setup for several TVs, you need an installer's remote, such as the HP602Z, and the LT2000/02 Clone Programmer (See page 1-10). The HP602Z Installer's Remote allows access to the Installer's Menu, User Menus, and Source/Channel Banks. The LT2002 Clone Programmer is used to duplicate a TV's setup and install it on one or more additional TVs.

Press the POWER key on the Installer remote control to turn on the TV.

SETUP MENU

Press the MENU key on the Installer's remote repeatedly so that the SETUP MENU appears on the screen.



AUTO PROGRAM

Using the SELECT on the remote control, highlight AUTO PROGRAM on the screen. Then press a RIGHT/LEFT Adjust arrow button to reach the AUTO PROGRAM screen.

Using the Up Arrow, choose either CABLE TV or OFF-AIR ANTENNA. Press a Right of Left Adjust arrow to begin the Channel Search and stores them in memory for user access.

ADD/DEL/BLNK

Press the Up Arrow repeatedly to highlight the ADD/DEL/BLNK option. Use the remote to select a channel. ADD/DELETE allows tailoring of the channel scan to eliminate unwanted channels and add desired channels that were not stored during Auto Programming.

Use the number keypad and ENTER to add a deleted channel. Using the RIGHT/LEFT ADJ arrows, pick whether a channel is Added, Deleted, or Blank. Blank is used by hospitals and institutions to send music or informational messages to an unused channel. When BLNK is selected, screen will be black while audio continues.

Select any other channels to be changed, and when finished, press ENTER to close the menu.

CH LABELS (CHANNEL LABELS)

Press the MENU key on the remote so that the SETUP MENU reappears. Use SELECT to choose the CH LABELS option. Pressing either the RIGHT/LEFT ADJ arrow repeatedly, pick the label you want from the list of available selections shown in the chart. Select other channels, and when you are finished, press ENTER to remove the menu. You also have the option of creating 20 programmable labels having five digits each.

CLOCK SET

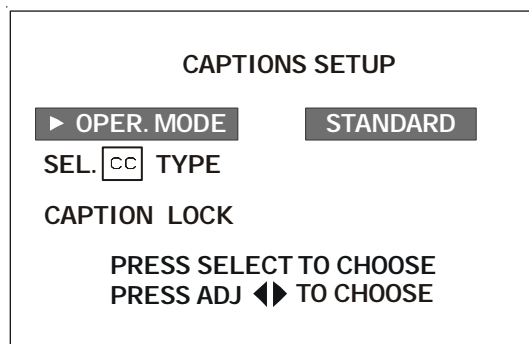
Use MENU repeatedly to show the Setup Menu. Use the Up Arrow to highlight Clock Set. Set the current time; use the Number keypad to enter the hours, then minutes. For example, enter 06, then 30, to set 6:30 on the clock. Use the TIMER key to specify AM or PM. Press ENTER to start the clock and return to TV viewing.

CAPTIONS

CAPTION is a feature that allows the TV to receive closed captions and/or text options when made available by the broadcaster.

There are two operating modes for captions: quick/mute and standard; if quick mute is selected, pressing the cc key shows the current cc selection.

Use the Right/Left arrows to choose any of the following options: CAPTION 1, CAPTION 2, CAPTION 3, CAPTION 4, TEXT1, TEXT 2, TEXT 3, TEXT 4. Press ENTER to close the menu.



TIMER

TIMER is a feature that allows TV turn on/off automatically each day at the preset time.

LANGUAGE

In the LANGUAGE menu, use the Right/Left arrow to choose one of the following options: English, Spanish or French.

Press ENTER to return to TV viewing.

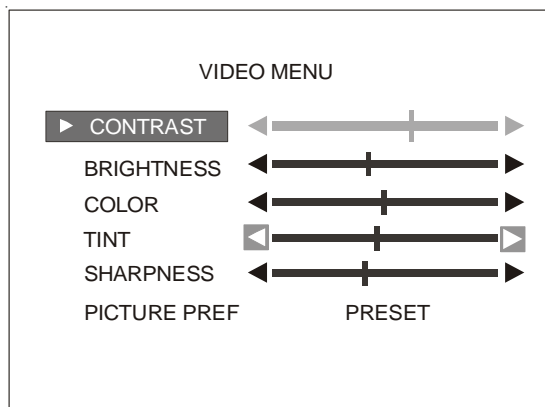
USER MENUS (continued)

VIDEO MENU

Press MENU repeatedly until the Video Menu appears.

Your options are:

- **CONTRAST:** Adjusts the contrast of the picture (difference between white and black). Has 64 steps (0 to 63).
- **BRIGHTNESS:** Adjusts the brightness of the picture (amount of white). Has 64 steps (0 to 63).
- **COLOR:** Adjusts the intensity of the color. Has 64 steps (0 to 63).
- **TINT:** Adjusts the tint of the color picture (balances between amounts of red and green in the TV picture). Has 64 steps (0 to 63).
- **SHARPNESS:** Raises or lowers the definition of the TV picture. The lower the level, the softer the images will appear (adjusts the sharpness of the picture). Has 64 steps (0 to 63).
- **PICTURE PREF:** Has two settings; PRESET and CUSTOM. In the Custom mode the brightness, contrast, color and tint can be set to a users particular liking. The preset settings brings up the factory setting for these controls. Preset is selected automatically after an AC power interrupt.



Use the Up Arrow on the remote control to highlight the setting you want to change. Press Right/Left arrow to adjust or change the option you have selected.

Press ENTER to return to TV viewing, or press the Up Arrow to change other options in the video menu.

PARENTAL CONTROL

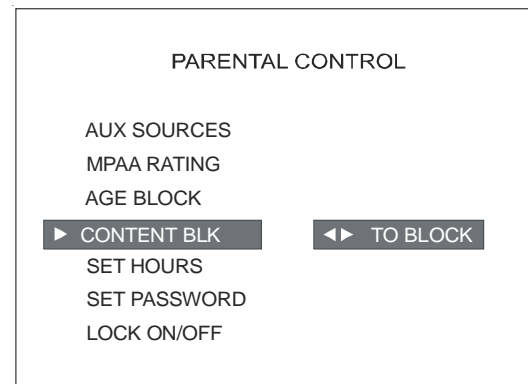
This optional feature can be used to prevent (block) unwanted programming from appearing on your TV.

PARENTAL CONTROL offers the user a wide variety of options and settings that restrict or block programming that can appear on the TV. PARENTAL CONTROL allows users the capability of defining which program ratings they consider acceptable to younger or more sensitive

viewers.

PARENTAL CONTROL can be preset and turned on or off by a user who specifies the 4 number password. The number of hours blocked must also be specified.

General audience and children viewer blocks can both be programmed into the TV's memory. Viewer ratings are specified for both the TV industry and the motion picture industry; both rating systems can be used. The ratings are based mainly on children's ages.



OVERVIEW

To ensure complete coverage for all TV programs (movies and regular TV shows), choose ratings from the Motion Picture Association of America (MPAA) Rating System chart and the TV Parental Guidelines Rating System chart (both shown on the next page). Use the AGE BLOCK option for General Audiences and for Children. You can also add additional restrictions from the CONTENT BLOCK menu.

Things to Consider before Setting Up Parental Control: Determine which ratings you consider acceptable for viewing. (For example, if you choose TV-PG, all of the more restrictive ratings will be blocked automatically: the viewer will not be able to see TV-PG, TV-14, or TV-MA rated programming.)

Select whether auxiliary video sources will be blocked in the AUX SOURCES block option. (Blocks signals from VCRs, DVD players, etc. connected to the TV Audio/Video input jacks). You could also leave AUX SOURCES unblocked, and then choose allowable ratings.

In the CONTENT BLK option, you can block program Content based on individual parameters such as Strong Dialogue, Bad Language, Sex Scenes, Violence Scenes, or Fantasy Violence Scenes.

You can set PARENTAL CONTROL to be active in the SET HOURS option for up to maximum hours defined by installer's menu (item 22-I), or V-Chip infinite blocking time restrictions if this feature is enable (item 84-I). Use the number keys on the remote to select a secret password in the SET PASSWORD option.

USER MENUS (continued)

Don't forget the password, as it is the only way you can access the PARENTAL CONTROL menu and change rating selections or turn PARENTAL CONTROL off.

If you do not want PARENTAL CONTROL to be active all the time, you can turn it on or off with the LOCK ON/OFF option.

Notes:

- *You can set different PARENTAL CONTROL viewing restrictions for general audiences and for children-- both can be active at the same time.*
- *Simply specifying one content block such as Sex Scenes, will not automatically block another type of content in the programs from appearing.*
- *Even if you choose to leave the AUX INPUTS unblocked, the ratings you specify will automatically restrict the programming that appears from the video sources.*
- *You cannot disable PARENTAL CONTROL by disconnecting the TV from power. Block hours will automatically reset to the original block time setting specified if power is disconnected.*
- *To reset the password, use the installer's remote control to deactivate the V-Chip in the Installer's menu (21-1). Exit out of the Installer's Menu after deactivating the Parental Control. Then enter back in and reactivate the V-Chip. Also to reset the password pressing and hold down menu until menu disappears (about 6 seconds) immediately press 9,8,7,6 and then CC. This will reset Block hours to 0 and cancel the current 4 number password.*

With the PARENTAL CONTROL menu on-screen, use the Up Arrow to choose an option, such as CONTENT BLOCK. Use the LEFT/RIGHT ADJ arrows to show the CONTENT BLOCK menu, to adjust or set the rating for an option.

To block sex scenes, for example, use the "TV-PG and above" setting. To block dialog, use LEFT/RIGHT ADJ arrows to select among UNBLOCKED, TV-PG and above, or TV-14. (See the Ratings Charts for rating meanings.)

After you have selected and adjusted the PARENTAL CONTROL menu options to your preferences:

- Set the number of hours Parental Control will be on.
- Set a 4 number password.
- Set the Lock On/Off option to either on or off.

ON-SCREEN DISPLAYS

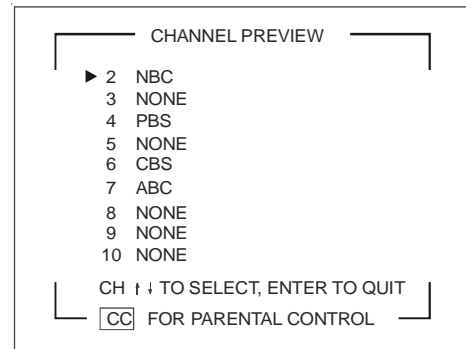
CHANNEL/TIME

Press ENTER. Shows currently selected channel or source, and current time if the clock has been set.

CHANNEL PREVIEW MENU

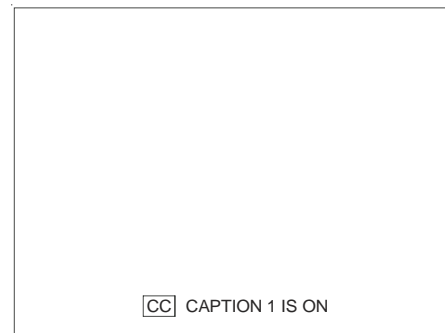
Press SURF. Displays list of the available TV Channels. Guest Parental Control menu (if active) and Video Channel access.

Press CHANNEL UP/DOWN to select a channel, then ENTER to go to that channel. Pressing CC will activate the Parental Control Menu.



CAPTIONS DISPLAY

Press CC. Sets and displays the Caption/Text options. See the Captions section on page 1-7.



USER MENUS (continued)

RADIO FEATURE

Pressing the TV/FM key allows the customer to listen the Radio. The Auto Program feature automatically searches for all available Radio Stations and marks them as 'added' so that they may be accessed via the channel Up/Down key.

In the Auto Program screen:

A message at the top displays "Auto Program" to let the customer know that they have entered the Auto Program feature.

To start the Auto Program, press the Left/Right Arrow key.

Note: While searching for radio stations, all keys are disabled. This prevents an incomplete Auto Program procedure. Running the Auto Program will clear the factory mode, if it was active. This happens at the end of the Auto Program. If no radio stations are found, then the following message will appear: "Make sure that the antenna is connected, and try again".

FM ADD/DEL

Allows tailoring of the station scan results to eliminate weak and unwanted stations. Use FM ADD/DELETE to get rid of unwanted stations or to program back in a previously deleted station.

Note: After using the FM Add/Del function, return to TV mode (press TV/FM key) before turning the TV off. This ensures that the FM Add/Del changes are saved in memory.

FM LABELS

Use FM Label to assign a label for the type of radio station shown in the Music ID display. For example, if the label ROCK is assigned to FM station 100.9, then ROCK will appear in the active stations list next to FM 100.9, whenever the Music ID display is shown. Labels available (besides Blank) include:

CLASSICAL	OTHER
COUNTRY	RELIGION
JAZZ	ROCK
NEWS	SPORTS
OLDIES	TALK

MUSIC ID	
101.9	RELIGIOUS
101.7	COUNTRY
101.3	CLASSICAL
101.1	NEWS
▶ 100.9	ROCK
100.7	OLDIES
100.5	JAZZ
100.3	TALK
99.9	SPORTS
CH ↑ ↓ TO SELECT ENTER TO QUIT	

TIMER SETUP

Turns on the FM Radio's Sleep Timer menu. Select TIMER SETUP, then press RIGHT/LEFT ADJ to choose the time the FM radio is to remain on before it turns off. Choose from 10 minutes to 4 hours. Once the turn off time has been selected, press ENTER to activate the timer and close the menu.

RADIO SCREEN SAVER

When the customer is done with setup, the radio screen saver turns on. The radio screen saver displays the Radio station, the audio mode, and the time as seen below.

104.1	MONO
10:56 PM	

This display is also scrolling down. Once the display reaches the bottom, it starts back at the top and keeps scrolling down. This scrolling occurs until the Menu key or the down arrow is pressed.

USER MENUS (continued)

CHANNEL BANK

Allows choosing between one of 4 channel banks.
Press SOURCE to change between banks.



PLANNING THE CHANNEL BANKS

Generally, TV channels are grouped into “program packages” with terms that are proposed to the end user. The user then opts for a package. Below is an example of how TV channels may be grouped.

Channel Bank	Program package
1	Basic cable channels
2	Extended cable channels
3	Extended with premium channels
4	Other cable service options

Sometimes only one or two channel banks may be needed. You may leave any unused bank with the channels. However, you may want to leave at least one channel in any unused bank. Then, if someone selects an unused bank, that channel will assure them that the TV is functional.

Note: *Some channels left over from factory testing may still be in the channel banks if you have not yet run Auto Program.*

ADDING/DELETING CHANNELS

A previously prepared programming chart is helpful.

1. Run AUTO PROGRAM (in the SETUP MENU). The channels available at your cable/antenna will be

entered in all channel banks (1, 2, 3 and 4).

Notes:

- *Channels previously blanked will be cleared; channels entered that are not currently available will be deleted.*
 - *The Blank Channel feature is global. A channel will be blanked in all channel banks.*
2. Select a channel bank with a remote press SOURCE/BANK (and repeat). The Channel BANK and BANK number will be displayed.
 3. Use the ADD/DEL/BLNK option (also in the SETUP MENU) to customize your program package. You may delete channels or add some that have not been entered. You can also Blank a channel to accommodate an audio-only program source or for in-house communication. The ADD/DEL/BLNK option has more details.
 4. AUX, FM Radio, VCR3, and VCR4 can be added provided they have been enabled in the Factory Menu and the hardware that uses this feature is present on the chassis.
 5. Repeat steps 2 and 3 to program another channel bank. It is best to do ADD/DEL customizing before doing BLANKING. ADD and DEL (not BLNK) can be used independently for channel banks 1, 2, 3, and 4).

Note: *Adding the channels VCR3 or VCR4 allows the TV to automatically tune to broadcast band channel 3 or 4 regardless of what band type is selected. This*

FACTORY MENU

ACCESSING FACTORY MENU

To access the Factory Menu, press and hold the MENU key until the User Menu display disappears, then press 1937, and then ENTER.

0IMCRKE018A	01.34	01
Microcontroller part number	Program Revision	Font Revision
00-F	Factory Option	
SN: XXXX-XXXXXXX	Serial Number	
UPN: XXX-XXX-XXX-XXX	User Programmable Number	
XX/XX/XX	TE = 10110000	
Build Date	TE Status	

The black bar near the top of screen indicates the part number of the micro installed on the set, the next number to the right is the software version running and the last number is the Font Version Used in the TV set.

The black square near the bottom of the screen indicates the Serial number of the TV Set (SN), the User Programmable Number (UPN) and at the lowest part indicates the date the module went through the factory and the Test Equipment status (TE).

Use the SELECT UP/DOWN keys to toggle through all of the adjustments. Use ADJUST to make a change to the selected item.

FACTORY MENU OPTIONS

0-F FACT MENU: Use SELECT UP and DOWN Keys to select item 00, the Factory Mode. This item is used by Factory when the module is being tested. It has two positions: 0 and 1. In the field, this item should always be left off (Zero is off).

When the Factory Menu is on, the AC Power-On feature is always enabled regardless of the setting of AC ON in the Installer's Menu. The TV set will automatically come on when AC is applied.

Use the remote to reenter the Factory Menu to turn the Factory Menu off. The Factory Mode may also be turned off by setting the clock, or running the Auto Program feature in the customer Set Up menu.

1-F PRESET PX: Stores the video customer menu adjustments in the nonvolatile memory of the EARAM. Settings for Contrast, Brightness, Color, Tint and Sharpness are stored in this manner. 0 is custom and 1 is preset stored.

2-F PRESET AX: Stores customer Audio menu adjustments in the nonvolatile memory of the EARAM. Settings for Bass, Treble, Balance, Audio mode, Front Surr and SoundRite are stored in this manner. 0 is custom and 1 is preset stored.

3-F VERT POS: Moves On-Screen Displays vertically. The Range is from 0-30. This adjustment is generally set at 15.

4-F HORZ POS: Moves On-Screen Displays horizontally. Range is from 1-45. Generally set at 9.

5-F RF AGC: (RF Automatic Gain Control) Range is from 0-63. 44 is a general setting. Tune in weakest available channel and adjust for a snow-free picture.

6-F HORZ AFC: Range 0-1. Set to 0. 0=AFC2 Normal. 1=AFC2 x 3.

7-F AUDIO LEVEL: Audio Attenuation adjustment. Range is 0-63. Typical value is 46.

8-F A ATT: Audio Attenuation adjustment. Range is 0-15. Typical value is 9.

9-F A VCO: (Voltage-Controlled Oscillator) Stereo VCO and Audio SAP VCO free running frequency adjustment. Range is 0-63. Typical value range 10-39.

10-F A FILTER: (Second Audio Program Voltage-Controlled Oscillator) Stereo, SAP, and dBx filter adjustment. Range is from 0-63.

11-F A SPECTRAL: Adjustment of stereo separation (3kHz). Range is 0-63.

12-F WIDE BAND: Adjustment of stereo separation (300kHz). Range is 0-63.

13-F RF BRT: (RF Brightness) Sets adjustment range of customer control for brightness in RF mode. Range is 0-63. A typical value is 30.

14-F AUX B-OFFSET: (Auxiliary Offset Brightness) Sets adjustment range of the customer control for brightness in AUX mode. Range is 0-63. Typical value is 30.

15-F MAX CONTRAST: Sets adjustment range of customer control for contrast. Range is 0-63. Typical value is 63.

FACTORY MENU(continued)

16-F WHITE COMP: (White Compression) Range 0-1. 0=Enable and 1=Disable

17-F TRAP 3.58: Zero is off and one is on. Set to 1 for normal TV operation. Set to 0 if Y/C is used or chassis has a comb filter.

18-F 60HZ SW: (60 Hertz Switched) The range is 0 to 2.

19-F PIF VCO: (PIF Voltage Controlled Oscillator) Range is 0 to 127.

20-F RF BAND PASS: Sets adjustment range of the customer control for brightness in therefore mode. Range is 0-1. Set to 1.

21-F RED CUT: B&W tracking adjustment. Range is 0-254. Typical value is 70.

22-F GREEN CUT: B&W tracking adjustment. Range is 0-254. Typical value is 70.

23-F BLUE CUT: B&W tracking adjustment. Range is 0-254. Typical value is 70.

24-F GREEN GAIN: B&W tracking adjustment. Range is 0-254. Typical value is 45.

25-F BLUE GAIN: B&W tracking adjustment. Range is 0-254. Typical value is 70.

26-F VERT SIZE: (Vertical Size) Range is 0-254.

27-F HORZ SIZE: (Horizontal Size) This register does not have any effect.

28-F VERT PHASE: (Vertical Phase) Range is 0-7.

29-F HORZ PHASE: (Horizontal Phase)
Range is from 0-31.

30-F AIR AFT: Force to AFC in Air Band.
Range is 0/1. Typical value is 0.

31-F EN LA7222: This register does not have any effect.

32-F CUT OFF RESET:

33-F GAW RESET:

34-F RF WHITE ADJ:

35-F BLACK ADJ:

INSTALLER'S MENU

ACCESSING INSTALLER'S MENU

Using the optional installer's remote control can access installer's menus. Just press and hold MENU (about 8 seconds) until the display changes, then press 9, 8, 7, 6, then ENTER. To exit the Installer's Menu, press ENTER again. Changes you make will be stored in nonvolatile memory. The Installer's Menu opens with item 00-I, INST. SEQ. Use the SELECT key to sequence through the available menu items. Or, access an item directly by entering the line number, then pressing MENU. For example, to access the Start Channel option, which is on line 11, press 11, then MENU. To change a current setting use the Left/Right ADJ keys.

0IMCRKE018A		01.34	01
Microcontroller part number		Program Revision	Font Revision
00-I Installer Option			
SN: XXXX-XXXXXXX		Serial Number	
UPN: XXX-XXX-XXX-XXX		User Programmable Number	
XX/XX/XX		TE = 10110000	
Build Date		TE Status	

The black bar near the top of the screen indicates the part number of the micro installed on the set, the next number to the right is the software version running and the last number is the Font Version Used in the TV set.

The black square near the bottom of the screen indicates the Serial number of the TV Set. (SN), then the User Programmable Number is the font (UPN) and at the lowest part indicates the date the module went through the factory and the Test Equipment status (TE).

The date on the black bar near the bottom of the screen indicates the date the module went through the factory. When the installer Menu appears, it displays the first Installer Menu item: INSTALLER SEQ.

Use the SELECT UP/DOWN keys to toggle through all of the adjustments. Use ADJUST to make a change to the selected item.

Detailed Descriptions of Installer Menu Items.

0-I. INSTALLER SEQUENCE

Gives access to Installer Menu depending on the code selected.

0 = 9876 1 = 4321
2 = 1478 3 = 3698

1-I. POWER MANAGE (Power Management)

Determines hours of no activity before automatic shutoff.

The POWER MANAGE function is for saving energy. When set to 0, Power Manage is OFF. Settings range from 0 - 7, with 1 - 7 representing the hours that the TV will remain on, unless there has been activity from either the control panel or remote control.

2-I. AC ON (AC Power Switchable)

Allows the TV to turn ON just by applying AC power. Pressing the ON button is not necessary. This is desirable when the TV is plugged into a cable box or a power outlet controlled by a wall switch. Use ADJUST to select 0 or 1, where 0 is the default is OFF, and 1 is ON.

NOTE: When set to 1 (ON), the TV does not respond to ON/OFF commands from either the remote or the control panel, and the SLEEP TIMER is also nonfunctional.

3-I. BAND/AFC (Band/Automatic Frequency Control)

There are 8 possible settings for this option:

0 = Broadcast Fixed 4 = Broadcast AFC
5 = CATV Fixed 1 = CATV AFC
6 = HRC Fixed 2 = HRC AFC
7 = ICC Fixed 3 = ICC AFC

Channels are accessed faster when fixed modes are used. The AFC (search modes) should only be used when some channels are not on nominal frequencies.

NOTE: BAND is automatically set by AUTO PROGRAM.

If some channels were not found by AUTO PROGRAM, select the appropriate AFC setting here and add the channels using the ADD/DEL option in the Setup Menu.

4-I. STRT CHANNEL (Start Channel)

When active, this function allows you to determine the initial channel number when the TV is turned ON. This feature is useful for an in-house information channel, since the TV would always select that channel when it is turned on. Setting this to 255 causes the last channel viewed when TV was turned off to be the tuned to channel when the TV is turned on again.

The range of values is 0 - 255. Use (adjust) keys to choose numbers that determine the start channel.

5-I. CHAN LOCK (Channel Lock)

CHAN LOCK is ideal if a cable box (or similar) is the sole source for programming—and the TV must always be on the same channel. Changing channels with Channel Up/Down or keypad numbers is impossible. Channel Lock is inactive when set to 0 (default).

Generally, this feature is used in conjunction with START CHANNEL (line 4-I.) where the start channel may, for example, be set to 3 or 4. If the start channel is 3 then the

INSTALLER'S MENU (continued)

TV will remain on channel 3. NOTE: When CHANNEL LOCK is active and CHANNEL OVERRIDE is disabled, AUTO PROGRAM is not active.

6-I. GHOST CH (Ghost Channel)

When set to 1, the current channel number is displayed in the upper right corner of the CRT. The number moves slightly to prevent damage to the screen. The default is "0" or OFF. NOTE: When captions are on, the "ghost channel" is not displayed.

7-I. START VOLUME

This function allows the Installer to determine the initial volume level setting when the TV is turned ON. This feature is useful for an in-house information channel, since the TV would always select that volume level when it is turned on. The range of values are 0 - 63, 255. If 255 is selected, the current volume level will be retained in memory when the TV is turned off; at TV turn on, volume level is automatically set to the previous or last level.

8-I. MIN VOLUME (Minimum Volume)

This function determines the minimum volume level allowable with the VOLUME (VOL) Up/Down control. In this way, for example, someone cannot set the volume too low to hear. The range is from 0 to 63—change values with ADJUST. The factory default is 0, which provides full range of volume control. It may be best to set the same value on every TV.

NOTE: The minimum volume level cannot have a value setting higher than in the MAX VOLUME level (described below).

9-I. MAX VOLUME (Maximum Volume)

This function determines the maximum volume level allowable with the VOLUME VOL Up/Down control. In this way, for example, someone cannot set the volume level high enough to disturb others. The range is 0 to 63, with 63 as the default which gives the user the full range of volume control. Change values with ADJUST keys. It may be best to set the same value on every TV. NOTE: The maximum volume level cannot have a value setting lower than the MIN VOLUME level (described previously).

10-I. MUTE DISABLE

Enables or disables sound mute function. When set to 1, sound cannot be muted. When set to 0, sound can be muted.

11 KEY DEFEAT (Keyboard Defeat)

When set to 1, it prevents the end user from accessing screen menus on the front panel—MENU, SELECT, and ADJUST do not function. When set to 0, those keys are

functional. The menus can always be accessed with MENU on the remote.

12-I. IR BANKS EN.

For direct access to a particular Channel Bank. When enabled, installer can access a channel bank by inputting the IR code for the bank.

13-I. SCAN MODE

Allows variation in setting the On/Off with Channel UP/DOWN. You may opt for TV channels only; TV channels + Off/ON; TV channels + FM radio; TV channels + FM radio + Off/On with these settings for Scan Mode:

Scan mode	Characteristics
0	Channel up/down keys change channels only.
1	Channel down below the lowest channel (or channel up higher than the highest) and TV turns off.
2	Channel down below the lowest channel (or up higher than the highest) and TV goes to FM radio. Channel down below lowest FM station (or Channel up higher than the highest) and TV channels return.
3	Channel down below the lowest channel (or up higher than the highest) and TV goes to FM radio. Press channel down below lowest FM station (or Channel up higher than the highest) and TV turns off.

14-I. STRT CH IN SM

When set to 1, installs TV on/off event below the start channel at TV turn on.

15-I. SLEEP TIMER

When set to 1, the SLEEP TIMER feature may be used (but no message is displayed prior to turn-off). When set to 0, the sleep timer is not available.

16-I. EN. TIMER

Set to 1, timer function is available to user. Set to 0 to disable timer functions. (Clock must be set in order to use Timers.)

17-I. ALARM

Gives you the option of making the alarm function available to the user. Set to 1, alarm function is available to user. Set to 0 to disable the Alarm function.

Note: Clock must be set in order to set the Alarm.

18-I. RADIO

Set to 1, for TVs with a Radio. Set to 0 to disable the Radio function, for TVs without a Radio.

INSTALLER'S MENU (continued)

19-I. NOT USED

20-I. FEATURE LEVEL

Default set to ZEN 1 for Zenith IR remote control operation. Set 0, P LBL for Zenith Private Label IR remote control operation. Warning: Do not set to "0" or remote will not control TV.

Installer should leave item 20 FEATURE LEVEL, set to 1 (default).



Installer should leave item 20 FEATURE LEVEL set to 1 (default).

21-I. V-CHIP

Set to 1 to activate V-Chip (Parental Control); have it available to user to filter, control, or restrict programming content. Set to 0 to turn V-Chip feature off, not available to user; no programming restrictions can be set.

22-I. MAX BLK HRS

Set to 0 to 99 for the maximum V-Chip (Parental Control) block hours. Default is 12 blocking hours.

23-I. CAPTION LOCK

Set to 1 to restore previous caption On/Off state after TV turns off. When set to 0, captions are always off, when TV is initially turned on.

24-I. TEXT MODE

Determines whether TEXT 1, TEXT 2, TEXT 3, or TEXT 4 decoding is enabled when TEXT is turned on (either from the Setup Menu or directly with CC on the remote).

TIP: Set Text Mode to 1 only if text is offered in your video system.

25-I. FUNCTION PRE.

Set to 0 to suppress CHANNEL PREVIEW from the FUNCTION menu with some Pay-Per-View systems.

26-I. 6 KEY SYS

Set to 1 for 6-key front control panels. Set to 0 for 10-key front control panels. Leave default set to 1.

27-I. HOSPITAL MODE

The default is 2 (which favors most hospitals). With this setting two things are affected: Channel Banks 1, 2, and 3 are accessible, while Bank 4 is inactive.

28-I. CH. OVERRIDE (Channel Override)

When set to 1, the user can select channels with either Channel Up/Down or by direct keypad entry. When set to 0, only those channels that are entered for scanning may be selected by direct keypad entry. Note: If set to 0, Auto Program is locked; (as shown on Setup menu) channel search is not possible.

29-I. OLD OCV (On Command Video™)

Set to 1 for operation with systems from On Command Corporation.

30-I. ACK MASK

M.P.I. Communication Parameter. Leave at default setting unless changed by Pay-Per-View provider.

31-I. POLL RATE

M.P.I. Communication Parameter. Leave at default setting unless changed by Pay-Per-View provider.

32-I. TIMING PULSE

M.P.I. Communication Parameter. Leave at default setting unless changed by Pay-Per-View provider.

33-I. NOT USED

34-I. NOT USED

35-I. NOT USED

36-I. NOT USED

37-I. NOT USED

38-I. NOT USED

39-I. REAR VIDEO EN.

Set to 1 to enable rear AUX (Video) input. Set to 0 to disable rear AUX input.

40-I. NOT USED

41-I. NOT USED

42-I. NOT USED

43-I. NOT USED

44-I. NOT USED

INSTALLER'S MENU (continued)

45-I. NOT USED

46-I. NOT USED

47-I. NOT USED

48-I. DIS. SETUP M.

Set to 1 to disable the Setup menu. Setup menu will not appear. Set to 0 to enable the Setup menu.

49-I. NOT USED

50-I. DIS. VIDEO M.

Set to 1 to disable the Video menu. Video menu will not appear. Set to 0 to enable the Video menu.

51-I. DIS. VCHIP M.

Set to 1 to disable the Parental Control menu. Parental Control menu will not appear.
Set to 0 to enable the Parental Control menu.

52-I. NOT USED

53-I. DIS. CH-TIME.

Set to 1 to disable the Channel-Time display. Channel-Time display will not appear.
Set to 0 to enable the Channel-Time display.

54-I. EN. SET. COL.

Set to 1 to enable custom color settings for the Setup menu. Set to 0 to disable custom color settings for the Setup menu

55-I. FOR. SETUP M.

(Setup Menu Foreground Color)
Set according to Color Chart.
0 = Black 3 = Yellow 6 = Cyan
1 = Red 4 = Blue 7 = White
2 = Green 5 = Violet

56-I. BCK. SETUP M.

(Setup Menu Background Color)
Set according to Color Chart.
0 = Black 3 = Yellow 6 = Cyan
1 = Red 4 = Blue 7 = White
2 = Green 5 = Violet

57-I. NOT USED

58-I. NOT USED

59-I. NOT USED

60-I. EN. VIDEO. COL.

Set to 1 to enable custom color settings for the Video menu. Set to 0 to disable custom color settings for the Video menu.

61-I. FOR. VIDEO M.

(Video Menu Foreground Color)
Set according to Color Chart.
0 = Black 3 = Yellow 6 = Cyan
1 = Red 4 = Blue 7 = White
2 = Green 5 = Violet

62-I. BCK. VIDEO. COL.

(Video Menu Background Color)
Set according to Color Chart.
0 = Black 3 = Yellow 6 = Cyan
1 = Red 4 = Blue 7 = White
2 = Green 5 = Violet

63-I. EN. PTL. COL.

Set to 1 to enable custom color settings for the V-Chip menu. Set to 0 to disable custom color settings for the V-Chip menu.

64-I. FOR. PTL. M.

(V-Chip Menu Foreground Color)
Set according to Color Chart.
0 = Black 3 = Yellow 6 = Cyan
1 = Red 4 = Blue 7 = White
2 = Green 5 = Violet

65-I. BCK. PTL. M.

(V-Chip Menu Background Color)
Set according to Color Chart.
0 = Black 3 = Yellow 6 = Cyan
1 = Red 4 = Blue 7 = White
2 = Green 5 = Violet

66-I. NOT USED

67-I. NOT USED

68-I. NOT USED

69-I. EN. CH-T COL.

Set to 1 to enable custom color for the Channel-Time display. Set to 0 to disable custom color for the Channel-Time display.

INSTALLER'S MENU (continued)

70-I. FOR. CH-T COL.

(Channel-Time Display Foreground Color)

Set according to Color Chart.

0 = Black 3 = Yellow 6 = Cyan

1 = Red 4 = Blue 7 = White

2 = Green 5 = Violet

Note: If foreground and background color are the same, menu background is transparent.

71-I. BCK. CH-T COL.

(Channel-Time Display Background Color) Set according to Color Chart.

0 = Black 3 = Yellow 6 = Cyan

1 = Red 4 = Blue 7 = White

2 = Green 5 = Violet

Note: If foreground and background color are the same, menu background is transparent.

72-I. NOT USED

73-I. CH NOT AVBLE

When set to 1 and channel override is set to 0, "NOT AVAILABLE" message is displayed when direct accessing a channel not in the favorite channel list.

74-I. CH-TIME SIZE

When set to 1 and transparent background is selected for Channel-Time display, (foreground color = background color and custom color enabled) a large channel number is displayed instead of the normal Channel-Time display.

75-I. NOT USED

76-I. DEFEAT XDS

Set to 1 to disable XDS display. Set to 0 to enable XDS display.

77-I. QUICK SHUTOFF

Allows TV power off to be controlled by the pillow speaker channel selection button. User would press and hold button down for time required to have TV turn off. Value Range 0 - 17, each number represents 1/2 second. For example, if set to 4, TV would turn off if user held speaker channel button down for 2 seconds.

78-I. UPN MSB

User programmable number, most significant byte readable/writeable by M.P.I. command.

79-I. UPN MSB-1

User programmable number, most significant byte-1 readable/writeable by M.P.I. command.

80-I. UPN MSB-2

User programmable number, most significant byte-2 readable/writeable by M.P.I. command.

81-I. UPN LSB

User programmable number, least significant byte readable/writeable by M.P.I. command.

82-I. CHKSM ERROR

Enforces rigid M.P.I checksum validation.

Set to 1 for validation. Set to 0 to turn off.

83-I. HANDSHK TIME

Adds an additional delay to the handshake time which is 64 msec, thus relaxing M.P.I. timing requirements to be compatible with PC based Windows controlled systems, range is 0 - 5. Set to 0 to retain standard 64 msec delay. Set to 1 - 5 to increase @ 16 msec additional, the delay up to 144 msec.

84-I. PERMANENT BLK

Allows Parental Control blocking schemes to be permanent by removing the blocking hours function. Set to 1 to install Parental Control blocking restrictions permanently. Set to 0 for user-specified hours control of blocking schemes.

85-I. NOT USED

86-I. NOT USED

87-I. NOT USED

88-I. EN NOISE MUTE

Allows to reduce the volume level automatically with no resignal or weak signal, set to 1 for future enable or to disable.

89-I. POKE ENABLE

Enable/disable to write the memory (EARAM) by MPI thru the command 17 data type 23 hex set to 1 for MPI poke enable or 0 to disable.

90-I. KEY LOCK

Enable/disable the front panel keyboard and pillow speaker. Set to 1 to disable and 0 for enable.

INSTALLER'S MENU (continued)

<i>Items in the Installer's Menu</i>				
Menu Item	Function	Value Range	Default Value	Brief Description of Function and Comments
0-I	INSTALLER SEQ	0 - 3	0	Leave default set 0.
1-I	POWER MANAGE	0-7	0	Sets number of hours of no activity before auto shutoff.
2-I	AC ON	0/1	0	Set to 1 to enable auto turn on at power up.
3-I	BAND/AFC	0-7	0	Tuning band, see detailed descriptions.
4-I	STRT CHANNEL	0-255	255	Channel at turn-on (255 last Ch).
5-I	CHAN LOCK	0/1	0	When set to 1, cannot tune from current channel.
6-I	GHOST CH	0/1	0	Set to 1 to enable Ghost Channel display.
7-I	START VOLUME	0-63, 255	255	Volume level at TV turn-on (Set 255 to retain last volume level).
8-I	MIN VOLUME	0-63	0	Minimum volume setting.
9-I	MAX VOLUME	0-63	63	Maximum volume setting.
10-I	MUTE DISABLE	0/1	0	Set to 1 to disable mute function.
11-I	KEY DEFEAT	0/1	0	Set to 1 to disable Menu, Select, and Adj keys on front panel.
12-I	IR BANKS EN.	0/1	0	Set to 1: enables TV to respond to IR codes to change Channel Bank directly.
13-I	SCAN MODE	0-3	0	Typically used for Hospitals: puts On-Off and FM in Ch Up/Down sequence.
14-I	STRT CH IN SM	0/1	0	Set to 1 to put TV on/off below start channel number.
15-I	SLEEP TIMER	0/1	1	Set to 1 to enable Sleep Timer.
16-I	EN. TIMER	0/1	1	Set to 1 to enable Timer.
17-I	ALARM	0/1	0	Set to 1 to enable Alarm.
18-I	RADIO	0/1	1	Set to 1 for TVs with Radio.
19-I	NOT USED			
20-I	FEATURE LEVEL	0/1	1 Zen 1	Leave default set 1 (1 Zen 1)
21-I	V-CHIP	0/1	1	Set to 1 to enable V-Chip
22-I	MAX BLK HRS	0-99	12	Select number of Parental Control blocking hours.
23-I	CAPTION LOCK	0/1	0	Set to 1 to retain caption setting at turn off.
24-I	TEXT MODE	0/1	1	Set to 1 to add Text option to closed caption menu.
25-I	FUNCTION PRE. 0	0-3	0	Controls channel preview in Pay-Per-View function menu.
26-I	6 KEY SYS	0/1	1	Leave default set to 1.
27-I	HOSPITAL MODE	0/1	1	Leave default set to 1.
28-I	CH. OVER RIDE	0/1	1	When set to 0, limits direct access to favorite channels.
29-I	OLD OCV	0/1	0	OCV should set to 1.
30-I	ACK MASK	0/1	0	M.P.I. communication parameter.
31-I	POLL RATE	20-169	94	M.P.I. communication parameter.
32-I	TIMING PULSE	186-227	207	M.P.I. communication parameter.
33-I	NOT USED			
34-I	NOT USED			
35-I	NOT USED			
36-I	NOT USED			
37-I	NOT USED			
38-I	NOT USED			
39-I	REAR VIDEO EN	0/1	1	Set to 1 to enable rear AUX video input.
40-I	NOT USED			
41-I	NOT USED			
42-I	NOT USED			
43-I	NOT USED			
44-I	NOT USED			
45-I	NOT USED			

INSTALLER'S MENU (continued)

<i>Items in the Installer's Menu</i>				
Menu Item	Function	Value Range	Default Value	Brief Description of Function and Comments
46-I	NOT USED			
47-I	NOT USED			
48-I	DIS. SETUP M.	0/1	0	Set to 1 to disable Setup menu.
49-I	NOT USED			
50-I	DIS. VIDEO M.	0/1	0	Set to 1 to disable Video menu.
51-I	DIS. VCHIP M.	0/1	0	Set to 1 to disable V-Chip (Parental Control) menu.
52-I	NOT USED			
53-I	DIS. CH-TIME M.	0/1	0	Set to 1 to disable Channel-Time display.
54-I	EN. SET. COL.	0/1	0	Set to 1 to enable custom color for Setup menu.
55-I	FOR. SETUP M.	0-7	6	Custom foreground color for the Setup menu.
56-I	BCK. SETUP M.	0-7	4	Custom background color for the Setup menu.
57-I	NOT USED			
58-I	NOT USED			
59-I	NOT USED			
60-I	EN. VIDEO COL.	0/1	0	Set to 1 to enable custom color for the Video menu.
61-I	FOR. VIDEO M.	0-7	4	Custom foreground color for the Video menu.
62-I	BCK. VIDEO M.	0-7	7	Custom background color for the Video menu.
63-I	EN. PTL. COL.	0/1	0	Set to 1 to enable custom color for the V-Chip (Parental Control) menu.
64-I	FOR. PTL. M.	0-7	6	Custom foreground color for the V-Chip (Parental Control) menu.
65-I	BCK. PTL. M.	0-7	4	Custom background color for the V-Chip (Parental Control) menu.
66-I	NOT USED			
67-I	NOT USED			
68-I	NOT USED			
69-I	EN. CH-T COL.	0/1	1	Set to 1 to enable custom color for the Channel-Time display.
70-I	FOR. CH-T COL.	0-7	1	Custom foreground color for the Channel-Time display.
71-I	BCK. CH-T COL.	0-7	1	Custom background color for the Channel-Time display.
72-I	NOT USED			
73-I	CH NOT AVBLE	0/1	0	When set to 1 and channel override is 0, "NOT AVAILABLE" message is displayed when direct accessing a channel not in the favorite channel list.
74-I	CH-TIME SIZE	0/1	0	When set to 1 and transparent background is selected for Channel-Time display, (foreground color = background color and custom color enabled) a large channel number is displayed instead of the normal Channel-Time display.
75-I	NOT USED			
76-I	DEFEAT XDS	0/1	0	When set to 1, XDS display program information will not appear.
77-I	QUICK SHUTOFF	0-17	0	Allows TV timed power off press and hold setup with pillow speaker channel button.
78-I	UPN MSB	0-255	255	User programmable number, most significant byte.
79-I	UPN MSB-1	0-255	255	User programmable number, most significant byte - 1.
80-I	UPN MSB-2	0-255	255	User programmable number, most significant byte - 2.
81-I	UPN LSB	0-255	255	User programmable number, least significant byte.
82-I	CHKSM ERROR	0/1	1	82-I. CHKSM ERROR 0 / 1 1 Enforces rigid M.P.I. checksum
83-I	HANDSHK TIME	0-5	0	Relaxes M.P.I. timing to be compatible with PC based Windows controlled systems.
84-I	PERMANENT BLK	0/1	0	Remove block hours setting for Parental Control and make blocks permanent.
85-I	NOT USED			
86-I	NOT USED			
87-I	NOT USED			
88-I	EN NOISE MUTE	0/1	1	Set to 1 to reduce volume level with wear signal.
89-I	POKE ENABLE	0/1	0	Set to 1 to enable write memory thru MPI.
90-I	KEY LOCK	0/1	0	Set to 1 to disable front panel keyboard and pillow speaker.

SERVICING

GENERAL INFORMATION

Servicing the CH -Flat chassis.

If the set is dead, first check the standby and switched voltages. If the switched voltages do not appear, check the power "On" circuit. If the power supply is OK and the set will turn On, the Horizontal sweep circuit should be checked next. Is horizontal drive available from the video processor chip? If the sweep system does not start up, sweep-derived voltages will not be generated.

If the sweep and high-voltage circuits are OK and video or audio are missing, then the audio/video/tuner circuits should be checked. If the receiver is working but some feature is not working, check the Service Menu. Bring up the Service menu and check to be sure that all items are set correctly.

MODULE-LEVEL SERVICING

The CH-Flat chassis is Module Level repair only. Replacement modules are available on an exchange basis.

If the CRT or Video processor IC is replaced, Black/White tracking must be reset. Refer to the Service Menus section of this book for Black/White tracking adjustments.

When troubleshooting video circuits, remember that all video travels through the Video/Audio switcher IC. A defect in either of these IC's can result in no video.

SERVICING THE POWER SUPPLY

Check the standby voltages first:

VDC at CX3412 (usually 169.7 VDC when 120 VCA)

+11 VSB at CX3611

B+ at CX3850

+13V at CX3662

Check the following:

Keyboard input at IC6000 pins 7 and 8

IR input at IC6000 pin 15

Power On output at IC6000 pin 32

KX3870 Correct relay operation.

Check the switched voltages:

+9 VSW at CX3853

SWEEP DERIVED VOLTAGES

+25 volts DC at (+) CX2111

+33 volts DC at ZD1240

+215 volts DC at (+) CX3209

CRT FILAMENT

Check at pin 3 and 4 of connector CN5C2. This should read voltages between 6.0 and 6.4 volts AC on a true RMS meter.

VIDEO PROCESSOR ICX2200

Check the following key operating signals and voltages:

Luminance at ICX2200 pin 43

Chroma at ICX2200 pin 45

Horizontal drive at pin 32

Vertical drive at pin 22

R Out pin 19

G Out pin 20

B Out pin 21

Serial Clock, Serial Data pins 27 and 28 respectively

VCC 9 volts pins 9,26,46 & 48

R in from micro (IC6000) at pin 15

G in from micro (IC6000) at pin 16

B in from micro (IC6000) at pin 17

MICROPROCESSOR

Check the following:

IR in on pin 15

+5 volts on pin 27 and 18

Serial Data, Serial Clock on pins 36 and 38

Reset at pin 30

Horiz. SYNC pin 1, Vertical SYNC on pin 2

8 MHz Oscillation at pins 24 and 25.

SERVICING (continued)

VERTICAL CIRCUIT

Check the following at ICX2100:

Vertical drive at pin 1.

Vertical out at pin 5.

+25 VDC at pin 7.

HORIZONTAL CIRCUIT

Check the following:

Horizontal drive to base of Q3201 predriver.

Driver transformer output at base of QX3200.

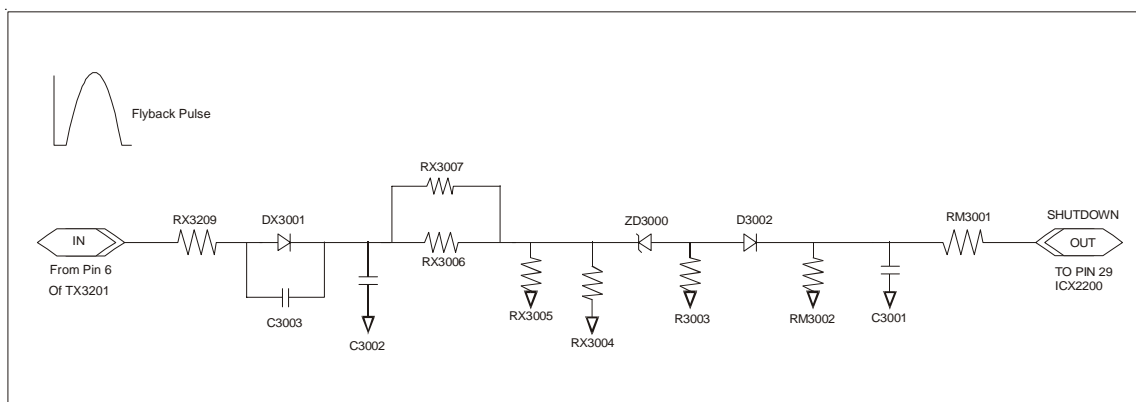
Shutdown voltage at cathode of D3002.

Shutdown Circuit Operation (Refer to figure below)

The flyback pulse voltage from pin 6 of TX3204 (Flyback Transformer) is peak detected (rectified) by the action of diode DX3001 and capacitor C3002. This forms a DC voltage representative of the CRT anode voltage (HV) produced by TX3201. Precision resistors RX3006 and RX3007, divide this voltage down. This lower voltage appears on the zener diode ZD3000; when this voltage exceeds by 3.5 Vdc the "zener voltage" the HV shutdown occurs (pin 29 of ICX2200).

HIGH VOLTAGE AND X RADIATION PROTECTION

To prevent possible exposure to x-radiation caused by excessive CRT anode voltage, the CH-FLat chassis incorporate a "High Voltage Shutdown" circuit. This circuit senses the level of a flyback pulse from the "Flyback Transformer" representative of the actual high voltage on the CRT anode. When this level exceeds a predetermined voltage, the circuit shuts down the TV set, preventing further generation of anode voltage.



SERVICING (continued)

NOTE: Each CRT screen size has its own safe operating anode and shutdown voltage. Critical safety component (designated with an 'X' in the component designator) are designed to operate the CRT at a safe operating anode voltage and provide proper shutdown thresholds. If replacement of any of these components is deemed necessary, it is important to use original type Zenith components. After replacement is made, confirm proper anode voltage using the following procedure.

Measurement of the CRT anode voltage must be performed using a high impedance-high voltage meter, with no raster on the screen, and operating at nominal horizontal frequency, 15.75 KHz (NTSC signal).

After discharging the CRT, connect a high impedance-high voltage meter to the CRT anode. Turn the television 'on' and confirm a good signal is being displayed. Reduce Brightness and Contrast settings until the picture is well extinguished.

Observe the anode voltage meter reading and compare with the table below for the proper CRT screen size. If the voltage reading is higher than the maximum, verify circuit component values and proper operation.

CRT Anode Voltage		
CRT screen size	Nominal anode voltage (KV)	Max. shutdown voltage (KV)
20"	26 ±	32

HV SHUTDOWN PROCEDURE.

- After discharging the CRT, connect a high impedance-high voltage meter to the CRT anode
- Access **Video Menu** and adjust Brightness and Contrast controls for minimum screen luminance (beam current to 0 mA).
- Wait until the **Video Menu** or display disappears.
- Connect a variable Resistor (1 MW) in parallel with RX3704, and decrease slowly the resistance value until shutdown occurs.
- Measure High Voltage shutdown.

IF SERVICING

VIDEO DETECTOR

If there is no viewable picture on screen, access the Service Menu and check default settings for the following items:

5-F RF AGC should be at least 40.

19-F PIF VCO set to 63.

Tune in good off-the-air signal. Place a high-impedance voltmeter at pin 44 of ICX2200. Adjust item PIF VCO 19-F to 2.5 volts DC.

AGC DELAY

With a strong noise-free antenna signal, adjust RF AGC 5-F to a lower setting until the signal gets noisier. Increase the setting again for a noise-free picture.

Note: If the setting is too high (above 50) the tuner input will overload. Under certain conditions, beats may also appear in the picture.

Tune in strong off air signal. Place a high impedance meter on pin #54 of ICX2200 or from + side of capacitor C1214. Adjust L1202 for 4 volts DC.

Note: Wait at least five minutes after the set has been turned on before making alignments.

SERVICING (continued)

G2 ADJUSTMENT

Use the following procedure when resetting G2.

1. Set Brightness and contrast in the Video menu to mid range.
2. Set color level minimum.
3. Connect the output of an NTSC generator to the antenna input on the receiver.
4. Select a color bar signal and turn color off. Adjust the G2 control so that the range of bar pattern start from completely white (not overdriven) to black. Let visible 6 of 8 bars.
5. Return color level control to its normal setting.
6. Carefully observe which color is predominant on the CRT, Red, Green or Blue. Do not change the value of cutoff control of this color.
7. Adjust the other two cutoff controls to obtain color balance on the screen.
8. Select the color bars pattern from the Video generator and turn the chroma off. Check that the TV set displays 3/4 of gray scale from white to black. If black level is too high, readjust, register #27, RF Brightness. Do not move Aux. B offset.
9. Return the color level control to preset.
10. Disable the factory menu (Factory Mode item 0 must be set to 0). Select "Preset" in the Video Menu under picture preference.

FOCUS ADJUSTMENT

1. Connect the output of a NTSC generator to the antenna input on the receiver.
2. Select white raster pattern.
3. Push menu key of remote control to observe the OSD.
4. Adjust focus potentiometer to obtain the best focus at letters of menu.

ADJUSTMENT OF RGB CUTOFF

NOTE: If the Main module or the CRT has been replaced, G2 must be readjusted before adjusting the RGB Cutoff.

1. Enter the Service menu to gain access to the cutoff adjustments. (Factory mode item 00 must be set to 1 to gain access to this adjustment).
2. Set G Gain (Green) and B Gain (Blue) registers in the Service menu to the default setting for the screen size as listed in the service menu. See table.
3. Set color level and contrast to minimum. Set tint to mid range.
4. Connected the output of NTSC generator to the antenna input of the receiver. Set the generator to a pure white signal, chroma off.
5. Set Factory menu registers #21, #22 and #23 to adjust cutoff controls.

SERVICING (continued)

PURITY & CONVERGENCE SETUP PROCEDURE

PRELIMINARY SETUP

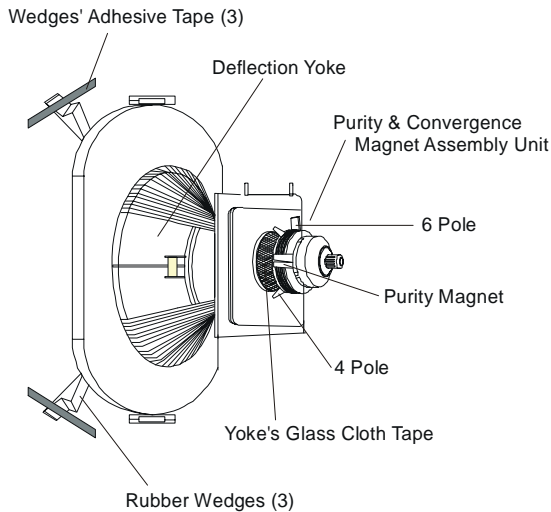
1. Allow the receiver to warm up for 15 to 20 minutes.
2. Degauss the CRT.
3. Connect a crosshatch generator to the receiver and "rough in" the static (center) convergence. Follow the Convergence Procedure.
4. Adjust for best focus.

PURITY ADJUSTMENT

1. Purity tab positioning. Set the 2 pole purity tabs together in the 3 or 9 o'clock positions and the 4- and 6-pole purity tabs together in the 12 or 6 o'clock positions.
2. Move yoke to the maximum forward funnel position.
3. Next, switch the crosshatch generator to a red field.
4. Pull the yoke toward the rear of the CRT neck, keeping it centered, until a red raster is displayed.
5. If the red raster is not displayed as a pure red field, adjust the 2-pole purity tabs until a pure field is obtained.
6. Check for proper yoke tilt setting.

CONVERGENCE ADJUSTMENT

1. Release locking assembly.
2. Connect crosshatch generator to the receiver and adjust static (center) convergence as follows:
 - a. Adjust the 4-pole static control by moving the two tabs separately to converge the red and blue lines horizontally. Move the two tabs together around the neck of the CRT (in a 45° arc) from the top-dead-center position to converge the red and blue lines vertically.
 - b. After the 4-pole control has been adjusted to superimpose the red and blue lines on top of one another. Use the 6-pole static adjustment to place the converged red and blue lines over the green line. Move the two tabs together around the neck of the CRT (in a 30° arc) from the top-dead-center position to move the lines vertically. Adjusting the two tabs separately will move the converged beam to the left or right.



CRT Ring Location Purity
Adjust Tabs Beam Movement
for Convergence

Ring Pairs	Rotation direction of Both Tabs	Movement of Red and Blue Beams
6 Pole	Opposite	←(B) OR (B)→ ←(R) OR (R)→
Convergence R&B over G	Same	↑(B) (R) OR ↓(B) (R)
4 Pole	Opposite	←(B) OR (B)→ (R)→ OR ←(R)
Convergence R over B	Same	↑(B) (R) OR ↓(B) (R)

SERVICING (continued)

VERTICAL-TILT WEDGE ADJUSTMENT

The vertical lines at 6 and 12 o'clock are converged by vertically tilting the yoke and inserting a wedge at the top of the yoke until it is firmly seated between the CRT glass and the horizontal coils.

HORIZONTAL-TILT WEDGE ADJUSTMENT

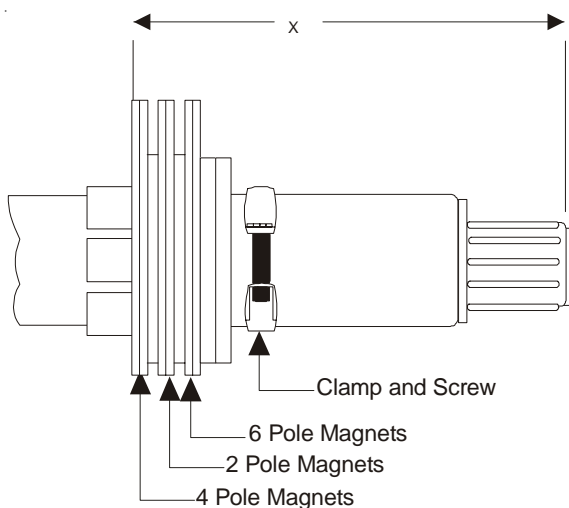
The vertical lines at 3 o'clock and 9 o'clock are converged by horizontally tilting the yoke and inserting a wedge.

Adjust first at 4 or 8 o'clock, whichever has the larger space, until the wedge is firmly seated between the CRT glass and yoke coils. Then, insert the 3rd wedge in the remaining horizontal tilt position until it is firmly seated between the CRT glass and yoke coils. Convergence at the 3 and 9 o'clock should be maintained during this operation.

When the 3 wedges are firmly installed and positioned for acceptable convergence, lock the wedges in place by applying a 2.5 inches long strip of tape across the tabs of each wedge firmly against the CRT glass. The CRT glass surface should be clean and free of dust and other foreign material.

UNUSUAL TILT CASE

There may be some instances where the picture tube and yoke will require vertical tilt in the opposite (up) direction to obtain convergence. In such cases, insert the vertical tilt wedge at the bottom (6 o'clock) position. Follow through on the horizontal tilt adjustment by using the 2 and 10 o'clock positions and secure each wedge with a piece of tape, as described above.



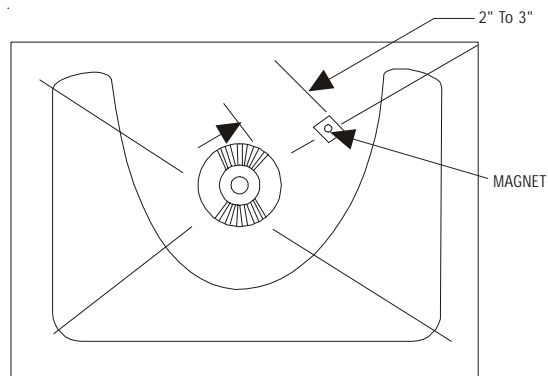
IMPROVING CRT CORNER PURITY

CRTs that display corner purity problems even after following the service procedures can be modified with a picture correction kit. The purity can be improved by placing a picture-correction magnet (included in the kit) on the CRT funnel. Refer to the following modification steps and illustration to place the magnet properly. Fully degauss the CRT before installing correction magnets.

MODIFICATION

1. Place the magnet on the CRT funnel as shown in the figure displayed below, in the quadrant exhibiting impurity.
2. Rotate the magnet in place to the position shown for best purity.
3. Place a piece of 1/2" by 2" long Fiberglass tape over the magnet to hold it in place.
4. Degauss the CRT once magnet is in place to insure that the magnet is not over the internal magnet shield.

Note: *If the magnet is placed over the internal magnet shield, any apparent purity correction will disappear after degaussing. Reposition the correction magnet off the internal shield and degauss again.*



MODEL PARTS

MODEL: H20H52DT	
PART NUMBER	DESCRIPTION
170-A01N	CPT EARTH
3091V00B81D	CABINET ASSEMBLY
3790V00712A	WINDOW
3846V00048B	MARK
3141VMNP47D	CHASSIS ASSEMBLY
6871VSMV74C	PWB(PCB) ASSEMBLY,SUB
6871VSMV75C	PWB(PCB) ASSEMBLY,SUB
6871VSMW20K	PWB(PCB) ASSEMBLY,SUB
6871VMMP46E	PWB(PCB) ASSEMBLY,MAIN
3141VSNC61A	CHASSIS ASSEMBLY
5020V00780C	BUTTON
3809V00B08C	BACK COVER ASSEMBLY
3828VA0518B	MANUAL,OWNERS
5016V20002A	MAGNET,STICK FERRITE
6140VC8004B	COIL,DEGAUSSING
6335V21020A	CPT ASSEMBLY
120-C77G	SPEAKER,FULLRANGE
6411VUH004B	POWER CORD ASSEMBLY
6871VSMV19A	PWB(PCB) ASSEMBLY,SUB

MODEL: H20H52DT8	
PART NUMBER	DESCRIPTION
170-A01N	CPT EARTH
3091V00B81D	CABINET ASSEMBLY
3790V00712A	WINDOW
3846V00048B	MARK
3141VMNP47D	CHASSIS ASSEMBLY
6871VSMV74C	PWB(PCB) ASSEMBLY,SUB
6871VSMV75C	PWB(PCB) ASSEMBLY,SUB
6871VSMW20K	PWB(PCB) ASSEMBLY,SUB
6871VMMP46E	PWB(PCB) ASSEMBLY,MAIN
3141VSNC61A	CHASSIS ASSEMBLY
5020V00780C	BUTTON
3809V00B08C	BACK COVER ASSEMBLY
3828VA0518B	MANUAL,OWNERS
5016V20002A	MAGNET,STICK FERRITE
6140VC8004B	COIL,DEGAUSSING
6335V21A04H	CPT ASSEMBLY
120-C77G	SPEAKER,FULLRANGE
6411VUH004B	POWER CORD ASSEMBLY
6871VSMV19A	PWB(PCB) ASSEMBLY,SUB

All CH Flat Models Level repair only. Parts contact information is below.

Voice: 1-888-3-ZENITH

Fax: 1-888-6-ZENITH

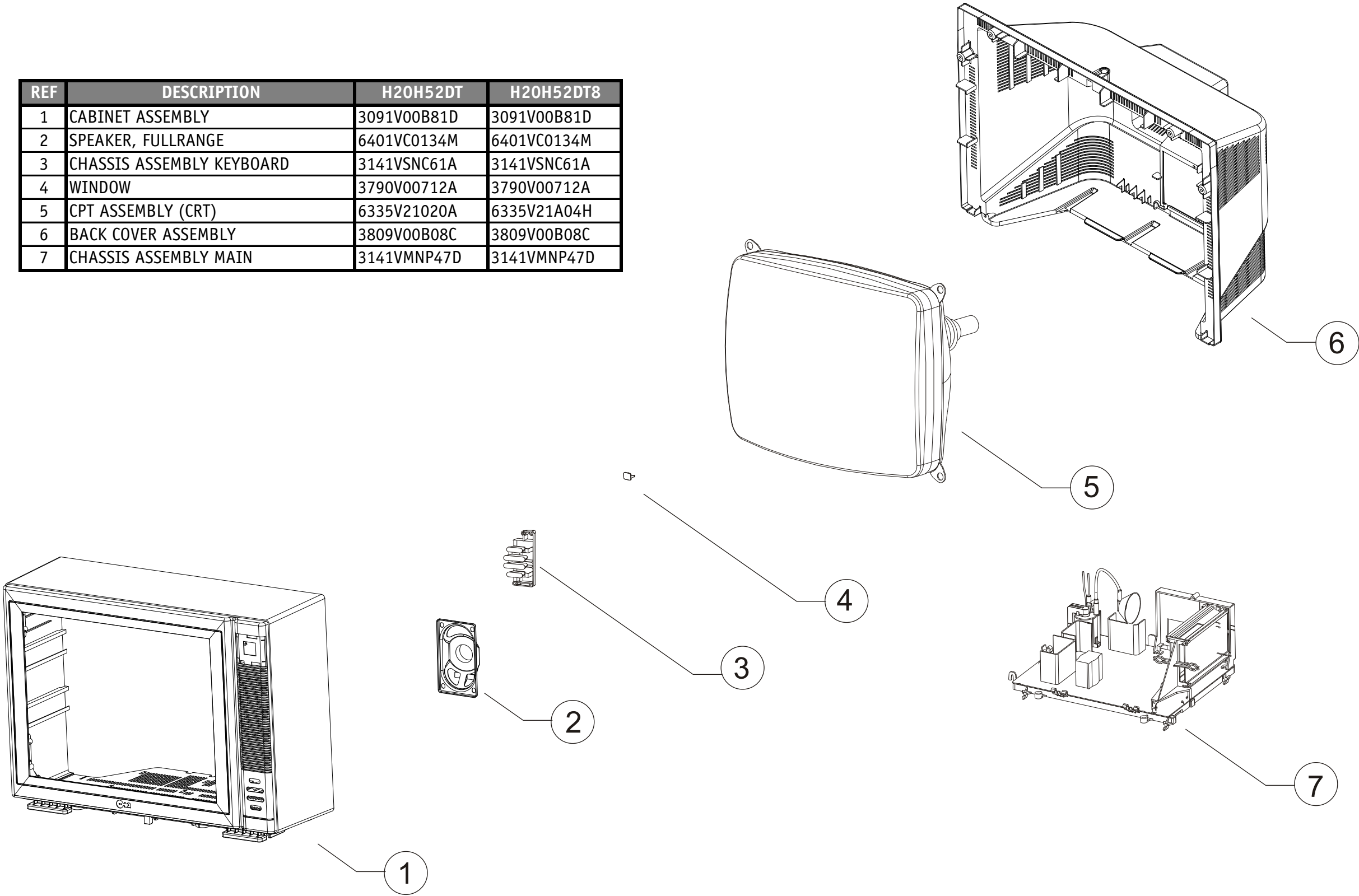
201 James Record Road

Huntsville, AL 35824-1513

H20H52DT/DT8 Exploded View

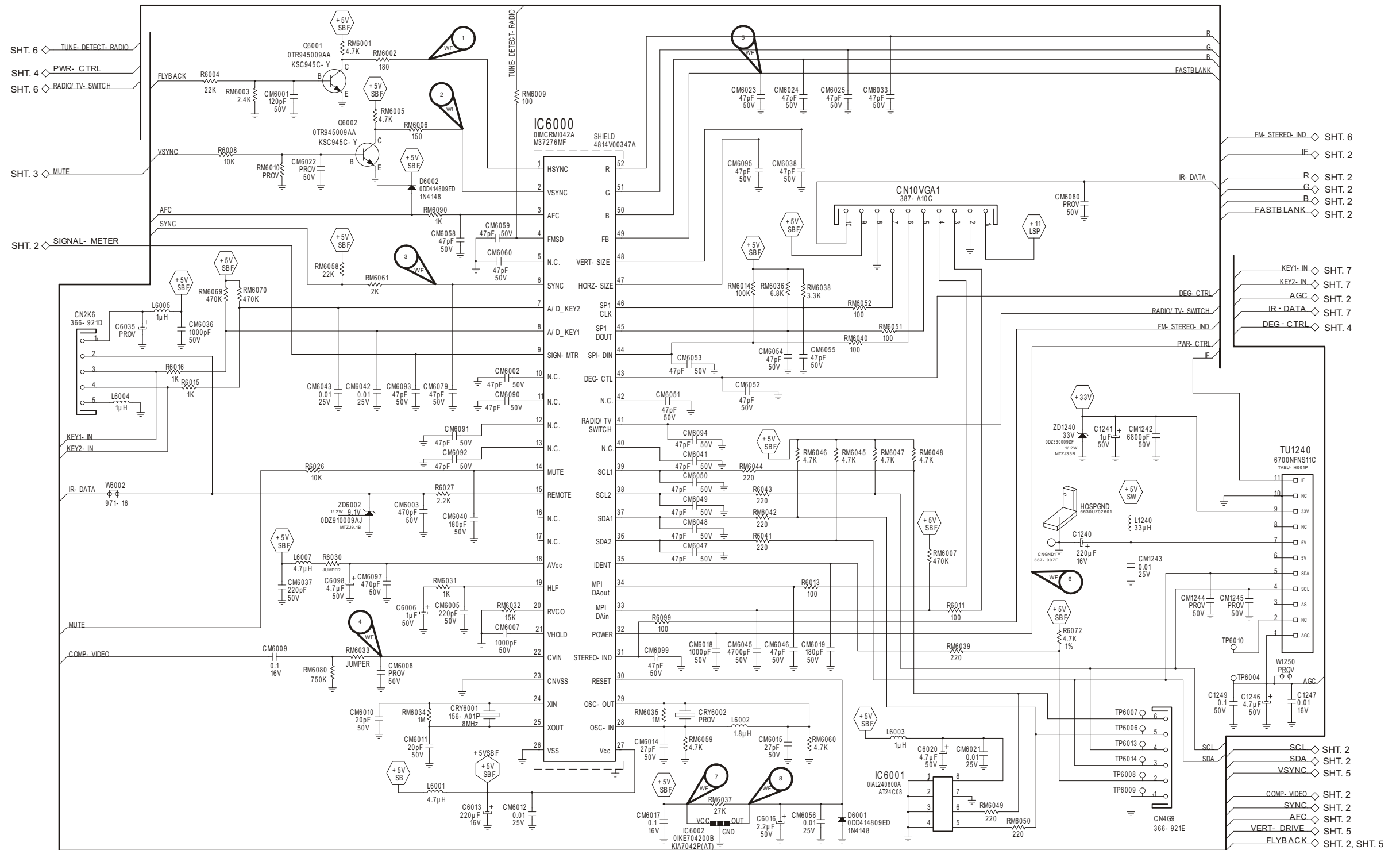
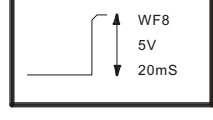
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REF	DESCRIPTION	H20H52DT	H20H52DT8
1	CABINET ASSEMBLY	3091V00B81D	3091V00B81D
2	SPEAKER, FULLRANGE	6401VC0134M	6401VC0134M
3	CHASSIS ASSEMBLY KEYBOARD	3141VSNC61A	3141VSNC61A
4	WINDOW	3790V00712A	3790V00712A
5	CPT ASSEMBLY (CRT)	6335V21020A	6335V21A04H
6	BACK COVER ASSEMBLY	3809V00B08C	3809V00B08C
7	CHASSIS ASSEMBLY MAIN	3141VMNP47D	3141VMNP47D



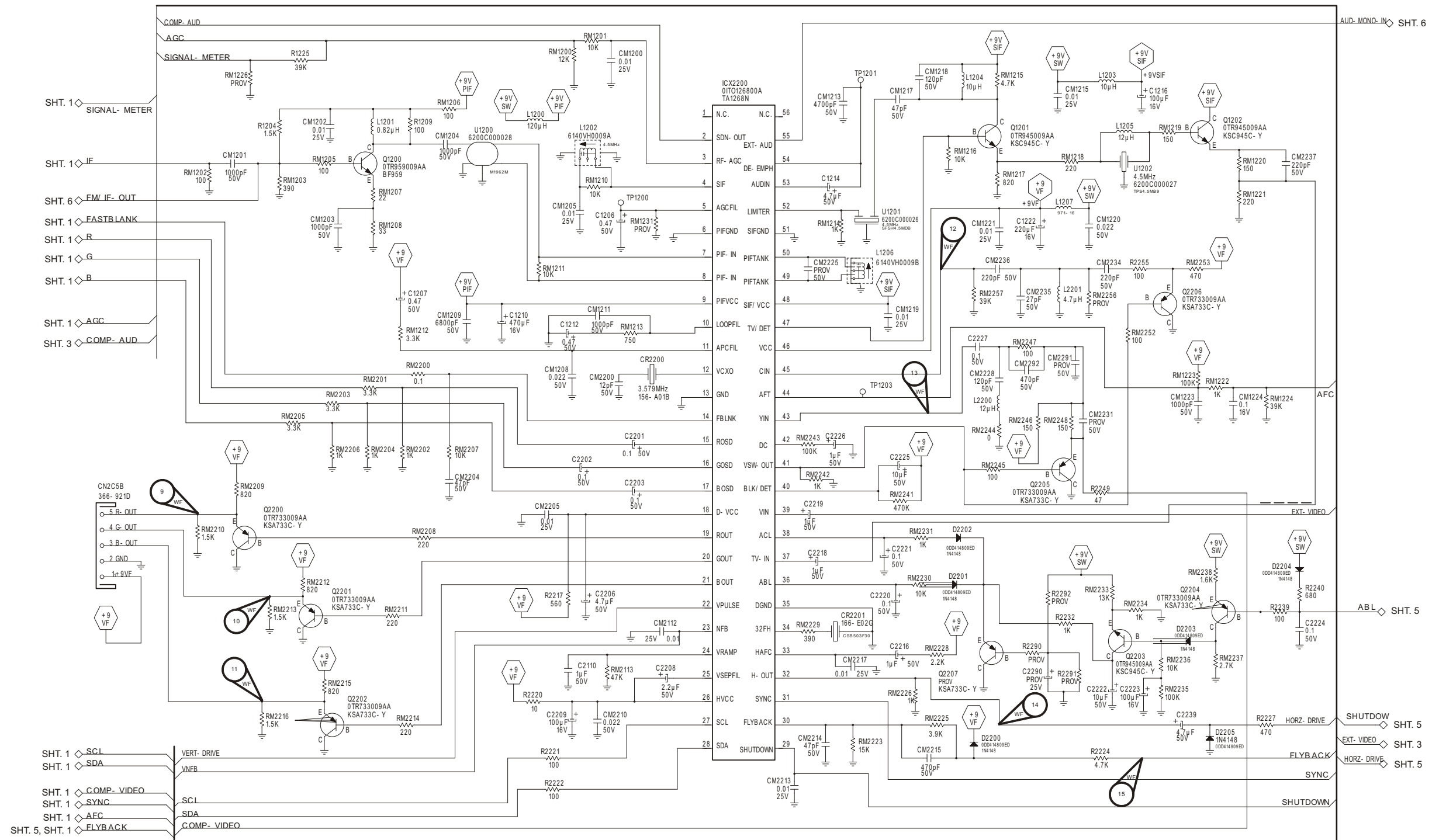
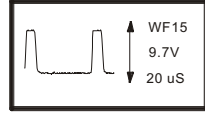
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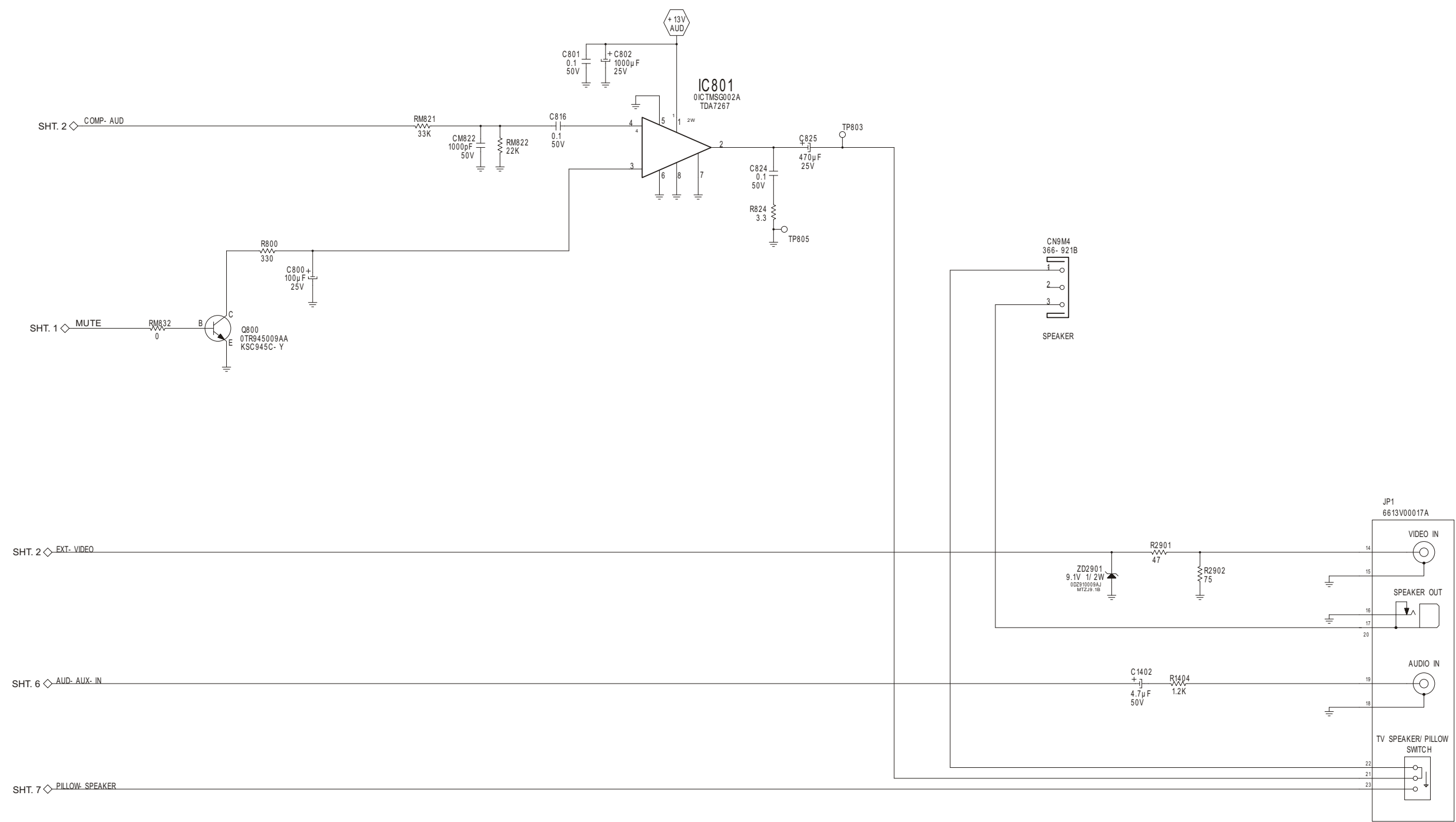


1	2	3	4	5	6	7	8	9	10
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A



Audio Amplifier



1	2	3	4	5	6	7	8	9	10
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Deflection

1	2	3	4	5	6	7	8	9	10
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G

F

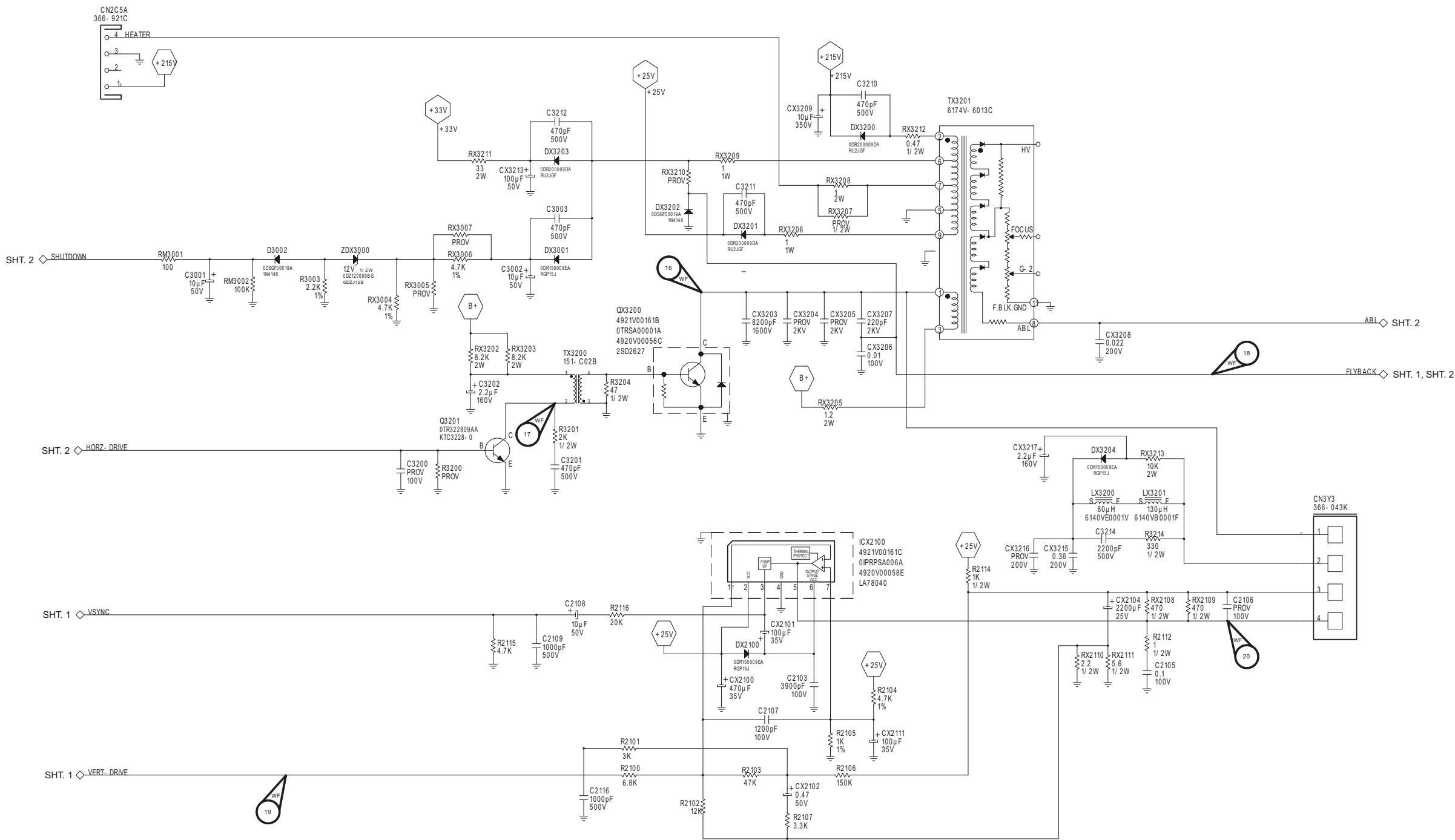
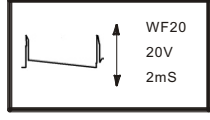
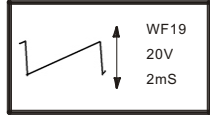
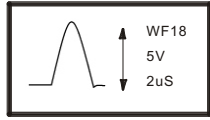
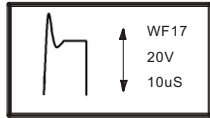
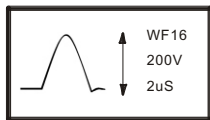
E

D

C

B

A



Radio

1	2	3	4	5	6	7	8	9	10
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G

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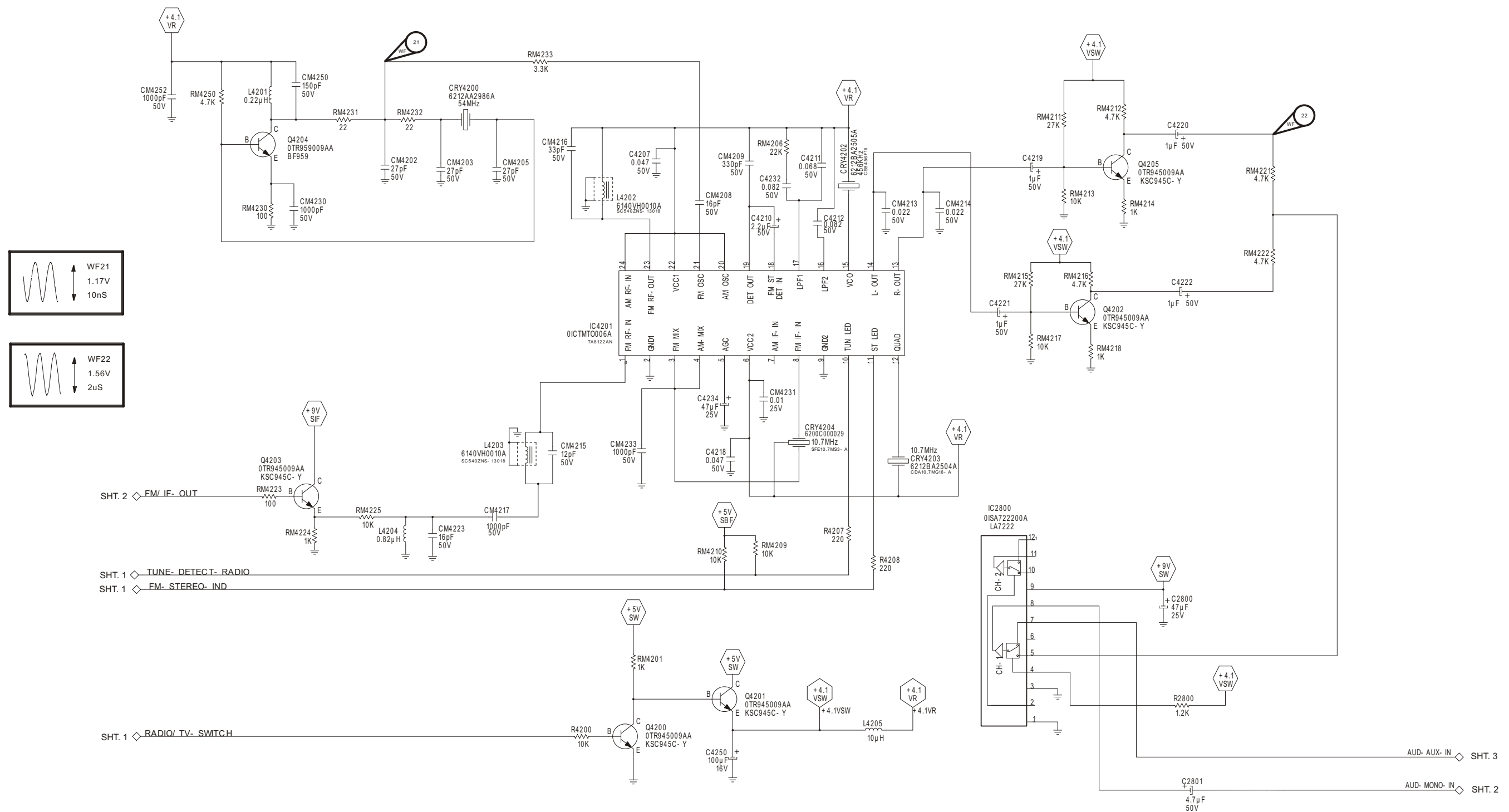
E

D

C

B

A



Pillow Speaker

1	2	3	4	5	6	7	8	9	10
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G

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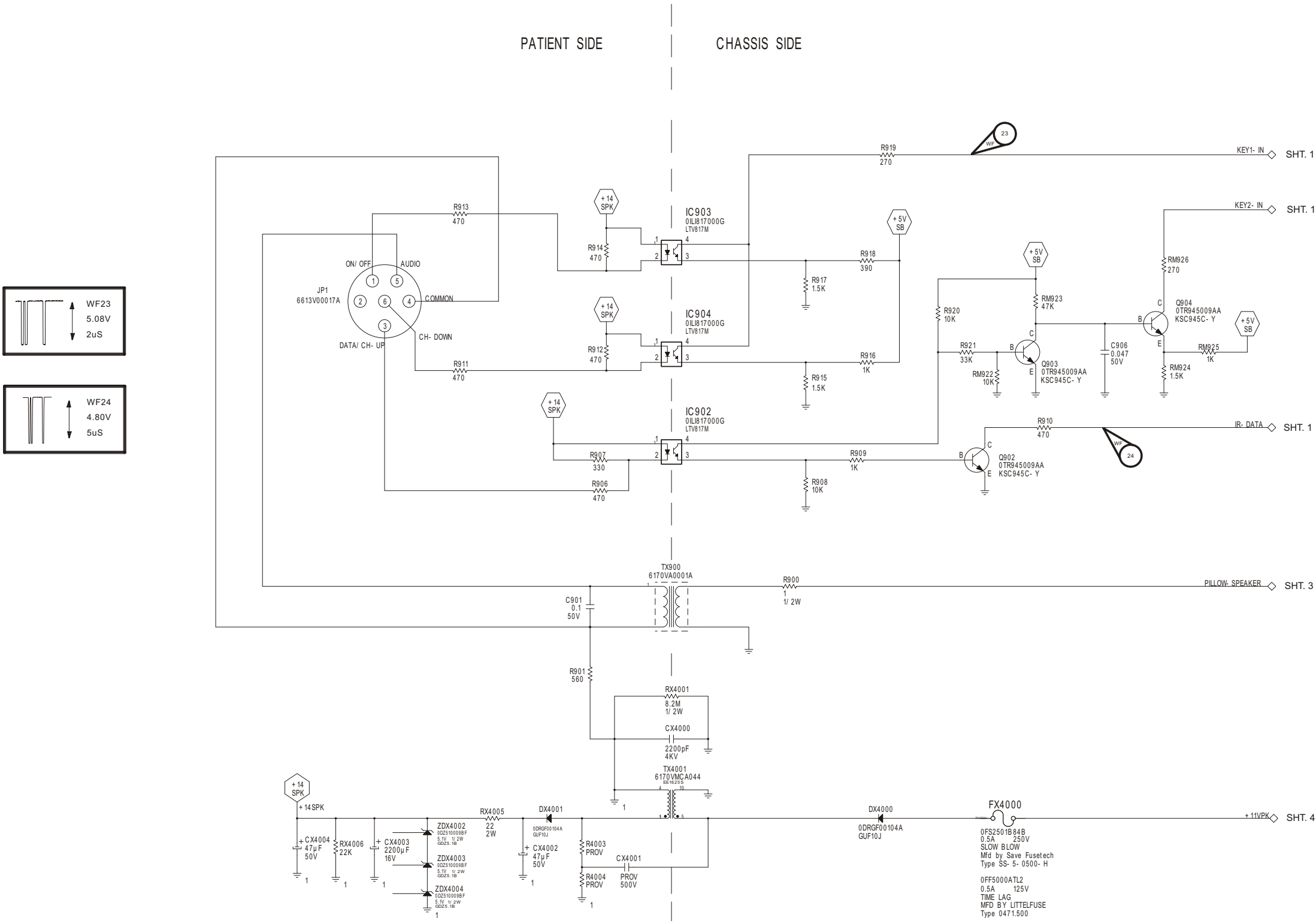
E

D

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Edge Card

1	2	3	4	5	6	7	8	9	10
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G

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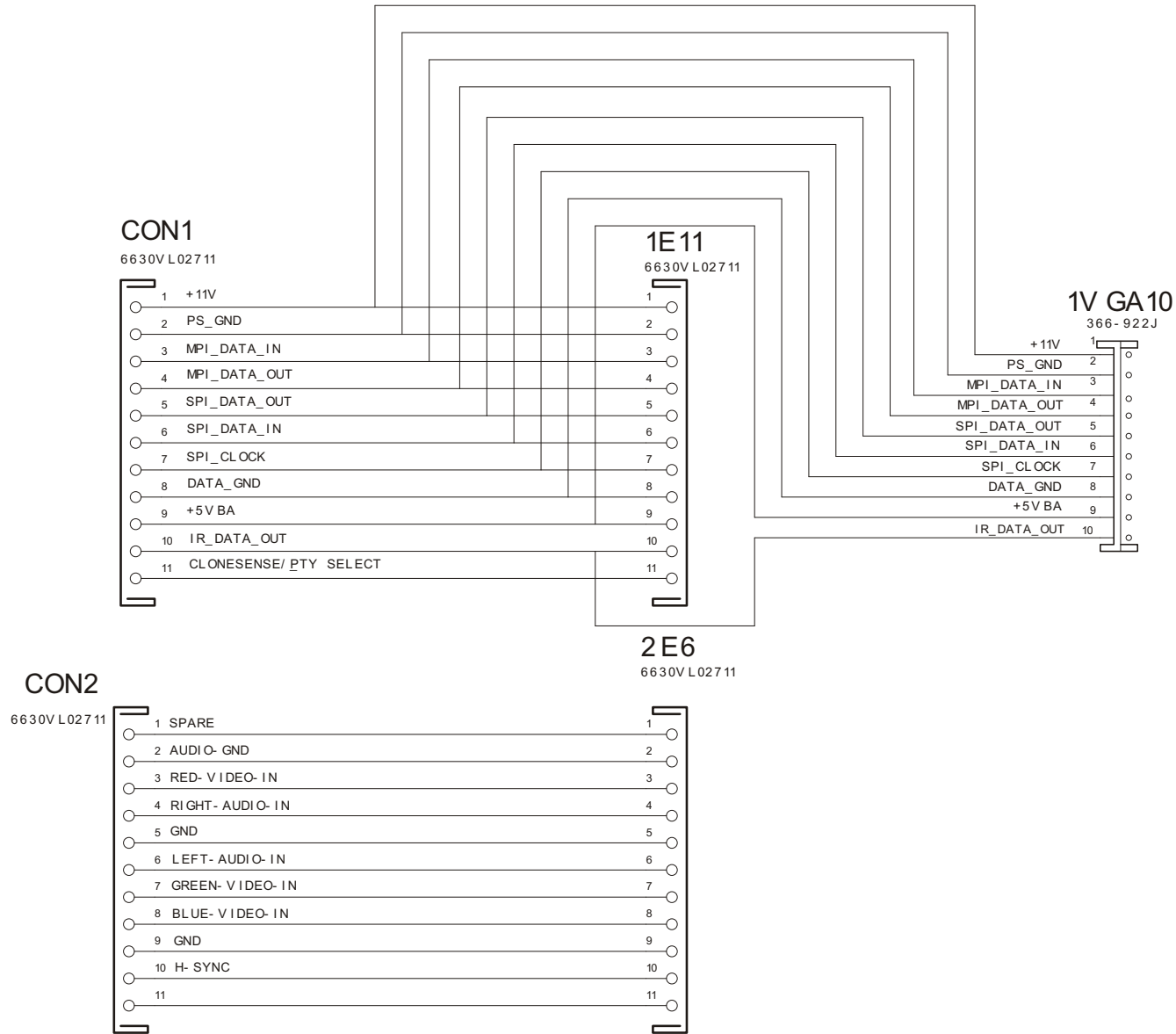
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D

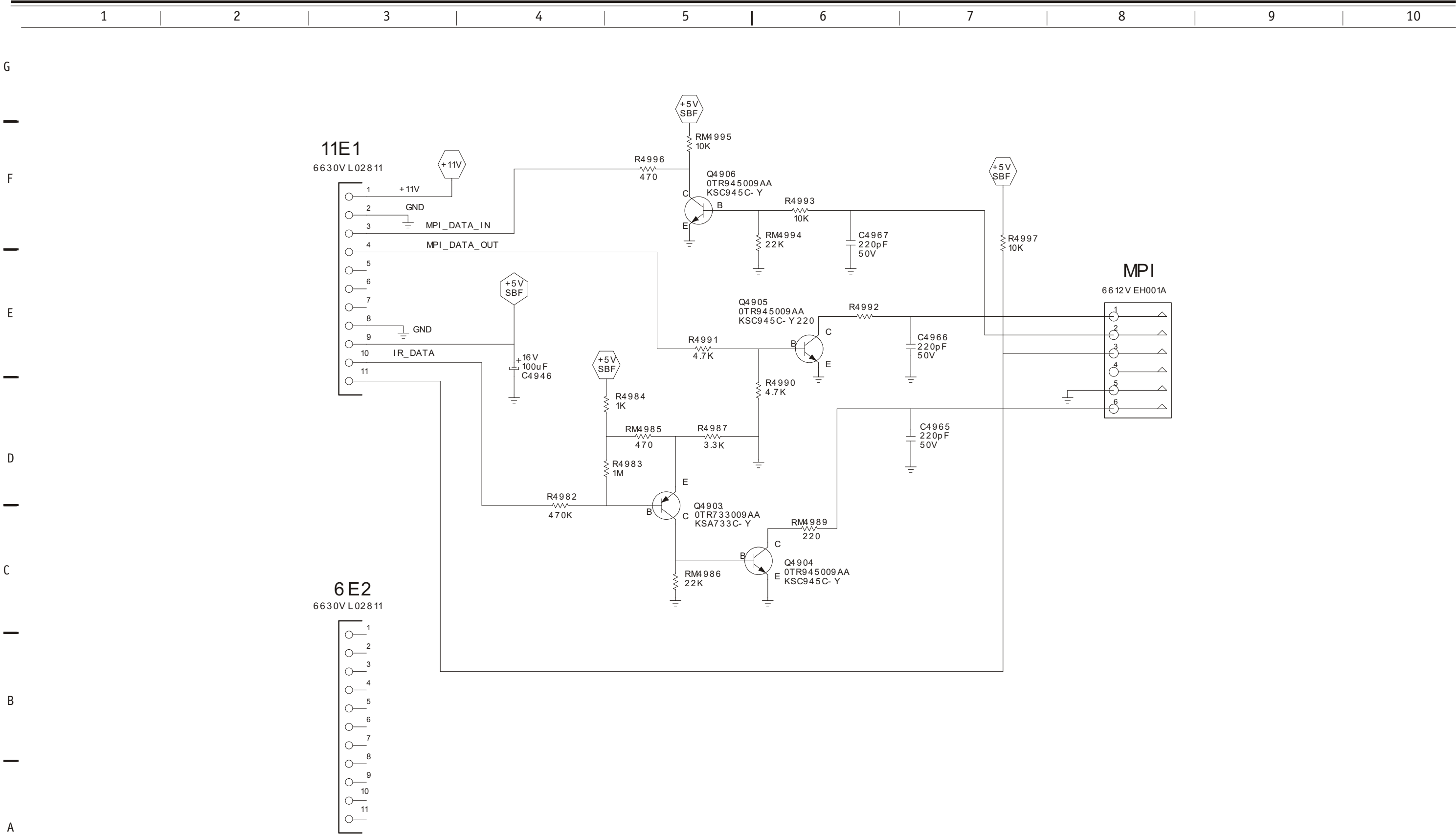
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B

A



MPI Card



Video Output

1	2	3	4	5	6	7	8	9	10
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G

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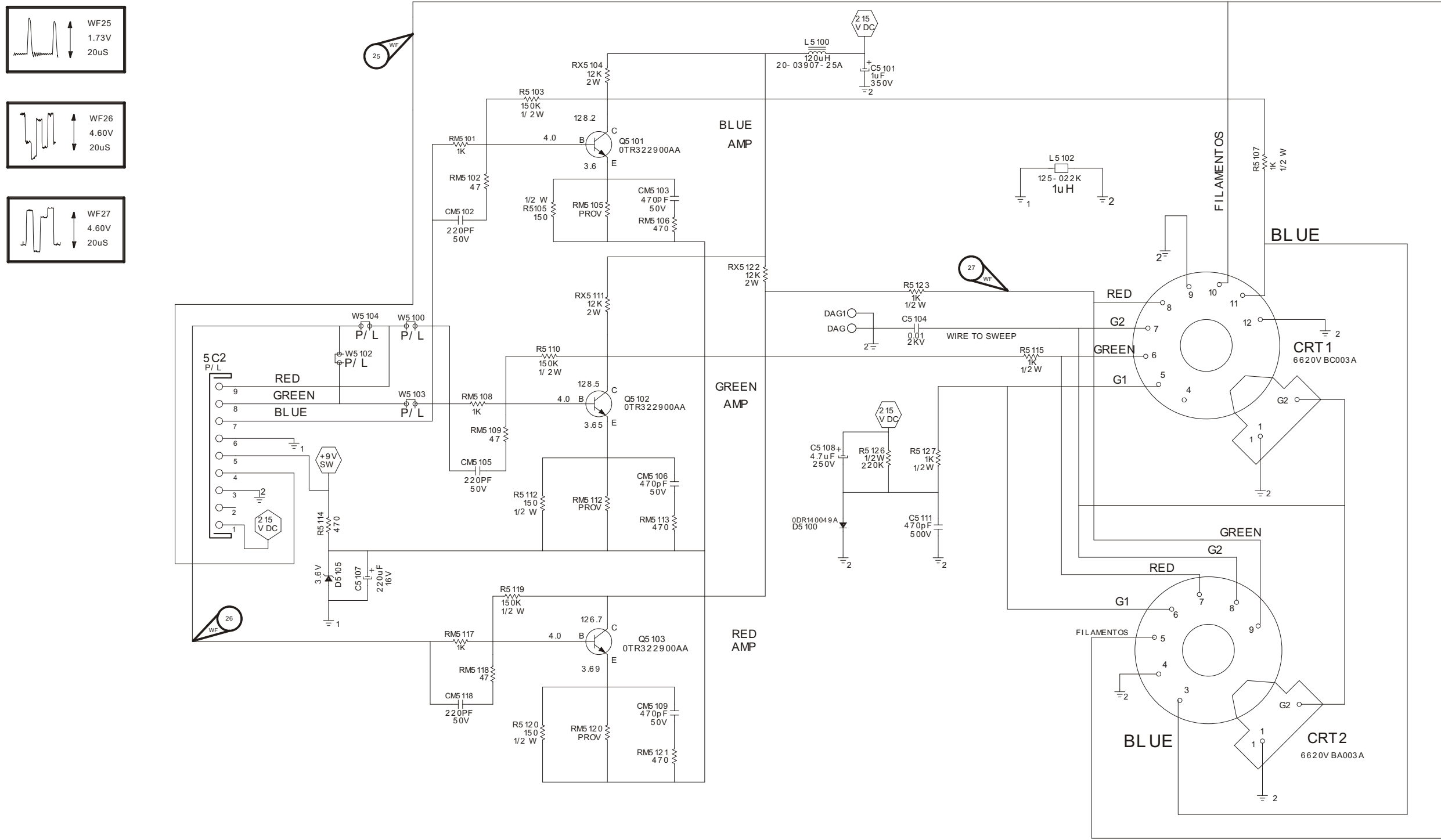
E

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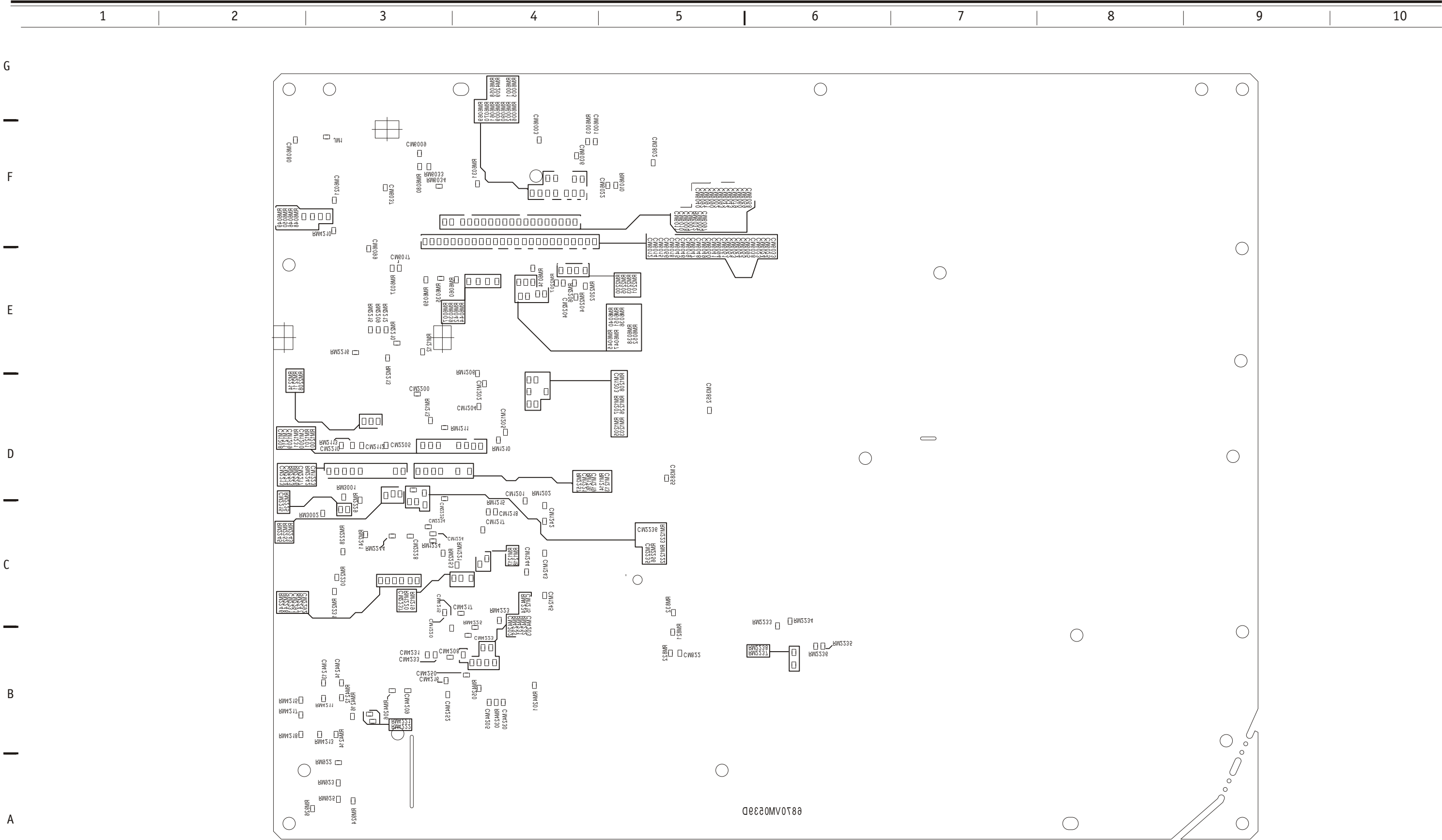
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1	2	3	4	5	6	7	8	9	10
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PCB Layout Bottom



1	2	3	4	5	6	7	8	9	10
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2nd. PCB Layout Bottom

